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Risk Assessment, Management, Communication: A Guide to Selected Sources. Update

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Washington, DC

May 87

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This is the first update to the March 1987 publication entitled Risk Assessment, Management, Communication: A Guide to Selected Sources. The risk update series is divided into three major sections: Assessment, Management, and Communication. This update also includes subsections on hazardous waste, radiation and a number of specific chemicals. Due to the expanding literature on risk, other subsections may be added to updates in the future. Each Table of Contents contains a complete list of the subsections. Updates are produced on a quarterly basis.

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May 1987
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EPA

Risk Assessment, Management, Communication

A Guide to Selected Sources

UPDATE

ASSESSMENT
MANAGEMENT
COMMUNICATION
R

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Risk Assessment, Management, Communication

A Guide to Selected Sources

ASSESSMENT
MANAGEMENT
COMMUNICATION

Office of Information
Resources Management
and
Office of Toxic Substances

May 1987

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EPA Regional Network for Risk Assessment/ Risk Management .... *

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APPENDIX C .... *

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This first update to the Guide has been prepared and reviewed by the U.S. Environmental Protection Agency (EPA). Due to the rapidly expanding field of risk information, EPA cannot guarantee that all relevant sources are cited. Publication does not signify that the contents reflect the views of EPA or that EPA endorses the coverage and scope of the subject matter as comprehensive, complete, and appropriate.

INTRODUCTION

This is the first update to the initial March 1987 publication Risk Assessment, Management, and Communication: A Guide to Selected Sources (Guide). Updates are produced on a quarterly basis. The references in this update are from the following databases: Toxline, Conference Papers Index, ENVIROLINE, National Technical Information Service (NTIS), Public Affairs Information Service (PAIS), ABI Inform, and Legal Resources Index. They cover the period from October through December 1986. Additional references were obtained from manual searches.

The risk update series is subdivided like the initial Guide into three major sections: Assessment, Management, and Communications. The citations for Chemical Risk Assessment and Chemical Specific Risk Management subsections are arranged alphabetically by title. This update also contains several additional subsections.

-- Hazardous Waste and Radiation.

Hazardous waste references have been added because of the increasing importance of this environmental issue. References addressing radiation were included in the initial Guide under "Risk Assessment -- Health Risks -- Cancer."

-- Specific chemicals.

Due to the expanding literature on risk, other new subsections may be added in the future. The Table of Contents contains the complete list of subsections. Not every update will contain references to all subdivisions. Where no references for subsections have surfaced, the Table of Contents will have an asterisk (*) for its page number.

The EPA library network can assist EPA staff and EPA contractors in obtaining materials. Reference copies of the Guide are available at all EPA libraries. For those outside of EPA, the Guide is available for distribution through NTIS at the following address:

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703-487-4650

Order number: PB87-185500

This update is also being placed in NTIS and its order number should be available for inclusion in the next update.

Contributions for the update can be sent to:

EPA HQ Library - PM-211A
Risk Update
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Washington, D.C. 20460

RISK ASSESSMENT

.... IS THE SCIENTIFIC PROCESS THAT EVALUATES THE POTENTIAL FOR OCCURRENCE OF ADVERSE EFFECT.

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    Office of Pesticide Programs *
    Office of Radiation Programs *
    Office of Research and Development *
    Office of Toxic Substances *

GENERAL PERSPECTIVE .... includes cross-media approach, de minimis risk, and uncertainty in assessment.

****ANATOMY OF RISK**
Rowe, William D.
MALABAR, FLA., RE KRICGER PUBLISHING COMPANY, 1985
Type of Document: Book
Keywords: TECHNOLOGY ASSESSMENT; RISK; DECISION-MAKING
Notes: REPRINT. ORIGINALLY PUBLISHED: NEW YORK: WILEY, 1977.
EPA Libraries: EKE OAQPS-RTP
T174.5.R68

****APPROACHES TO CHEMICAL HAZARD ASSESSMENT IN THE PRESENCE OF LIMITED DATA**
FARLAND WH, AUER CW
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT HUMAN EPA POLLUTION (NLM)

****ASSESSMENT AND MANAGEMENT OF CHEMICAL RISKS: BASED ON A SYMPOSIUM**
SPONSORED BY THE DIVISION OF CHEMICAL HEALTH AND SAFETY AT THE 184TH MEETING OF THE AMERICAN CHEMICAL SOCIETY, KANSAS CITY, MISSOURI, SEPTEMBER 12-17, 1982.
Rodricks, Joseph; Tardiff, Robert G.
WASHINGTON, DC, AMERICAN CHEMICAL SOCIETY, 1984
Keywords: TOXICITY TESTING; HEALTH RISK ASSESSMENT
EPA Libraries: EKC GBREEZE
RA1199.A77 1984

BENEFITS ASSESSMENT. THE STATE OF THE ART.
Bentkover, Judith D; Covello, Vincent T; Mumpower, Jeryl
Higham, Ma; Kluwer Academic, 1985
255p.

BIOTECHNOLOGY AND THE ENVIRONMENT: Risk and Regulation: Proceedings of a Seminar Services.
WASHINGTON, DC, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, 1985
TP248.2.B5513
EPA Libraries: EJE OTS

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****CHEMICAL RISK: A Primer**
Department of Government Relations and Science Policy
Washington, DC, American Chemical Society, 1984
12 p.

****THE CULTURE OF RISK ASSESSMENT AT EPA**
YOSIE TF
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT POLLUTION (NLM)

****Data base for risk assessment.**
Tarkowski S
Sci Total Environ; VOL 51, 1986, P19-25
Health risk assessment associated with exposure to toxic chemicals is a process consisting of three basic elements: (i) hazard identification, (ii) risk estimation, and (iii) risk evaluation. Each of these elements provides a data base for making decisions regarding the control of chemical hazards for the prevention of health risk. Each of these elements involves various degrees of uncertainty, yet credibility of the management of risk requires that risk assessment be made with the highest possible accuracy and degree of confidence. (NLM)

ELEMENTS OF TOXICOLOGY AND CHEMICAL RISK ASSESSMENT
ENVIRON CORP
1986
Notes: A handbook written in nontechnical language that provides guidance in understanding the fundamentals of toxicology and the concepts of chemical risk assessment.

IDENTIFICATION OF RISK
ROWE WD
OFTEDAL, P. AND A. BROGGER (ED.). PROGRESS IN CLINICAL AND BIOLOGICAL RESEARCH, VOL. 208. RISK AND REASON: RISK ASSESSMENT IN RELATION TO ENVIRONMENTAL MUTAGENS AND CARCINOGENS; SATELLITE SYMPOSIUM TO THE FOURTH INTERNATIONAL CONFERENCE ON ENVIRONMENTAL MUTAGENS, OSLO, NORWAY, JUNE 21-22, 1985. XV+189P. ALAN R. LISS, INC.: NEW YORK, N.Y., USA. ILLUS. ISBN 0-8451-5058-8.; 0 (0). 1986. 3-22.
BIOSIS COPYRIGHT: BIOL ABS. RRM HUMAN RISK ANALYSIS ACCIDENTS SAFETY (NLM)

**** NEW RISK ASSESSMENT INITIATIVES IN EPA.**
Anderson, Elizabeth; EHRLICH, ALAN M.
Toxicology and Industrial Health (1985), 1(4):7-22.
This paper describes EPA's recent efforts to ensure consistency and technical competence of the agency's risk assessments. These

include five risk assessment guidelines proposed in November 1984 and January 1985 and establishment of a Risk Assessment Forum. The technical provisions of the five guidelines have been outlined.

****RISK ACCEPTABILITY ACCORDING TO THE SOCIAL SCIENCES**
Douglas, Mary Tew
New York, Russell SAGE FOUNDATION, 1985
TYPE OF DOCUMENT: SERIES: SOCIAL RESEARCH PERSPECTIVE; II
KEYWORDS: Risk Perception -- Social Aspects
H91.1]67 1985

****RISK ANALYSIS -- THE UNFULFILLED POTENTIAL.**
Russell, Milton
Assistant Administrator, Office of Policy, Planning and Evaluation, EPA.
Paper Presented at the Society for Risk Analysis,
Boston, Mass., Nov. 10. 1986. p18.

****THE USES AND ABUSES OF SCIENTIFIC UNCERTAINTY INRISK ASSESSMENT.**
Silbergeld, Ellen
Natural Resources & Environment (Fall 1986), 2(2): 17-20, 57.

****RATING THE RISKS**
SLOVIC P, FISCHHOFF B LICHTENSTEIN S
ENVIRONMENT 1979, 21(3) 14-20, 36-39 (NLM)

Process and assumptions in risk assessment.
Hart RW, Turturro A
National Center for Toxicological Research, Jefferson, AR 72079.
Ann Clin Lab Sci; VOL 16, ISS 5, 1986, P353-7
Keywords: Dose-Response Relationship, Drug,
Environmental Exposure *, Human, Risk (NLM)

THE APPLICATION OF FUNDAMENTALS IN RISK ASSESSMENT
KOLBYE AC JR
ACS (AM. CHEM. SOC.) SYMP. SER. [N.D.], 15 PP.
Keywords: DNA, ANIMAL, CHEMICALLY INDUCED, NEOPLASMS, RISK, MODELS, THEORETICAL, CARCINOGENS, MUTATION, GENETICS, HYPERPLASIA, DOSE-RESPONSE RELATIONSHIP, DRUG, DNA REPAIR
CAS REGISTRY NUMBERS: 9007-49-2 (NLM)

THE MEANING OF RISK ASSESSMENT.
BROWN AL
ONCOLOGY 1980, 37(4) 302-305
Keywords: SACCHARIN,ANIMAL,BIOLOGICALASSAY, BLADDER

NEOPLASMS, CHEMICALLY INDUCED, COMPARATIVE STUDY,
DOSE-RESPONSE RELATIONSHIP, DRUG, FEMALE, HUMAN,
MALE, MAXIMUM PERMISSIBLE EXPOSURE LEVEL, NEOPLASMS,
NITROSO COMPOUNDS, TOXICITY, PROBABILITY, RATS, RISK,
SWEETENING AGENTS
CAS REGISTRY NUMBERS: 81-07-2 (NLM)

RECENT ADVANCES IN RISK ASSESSMENT.
FARMER FR
ANN. OCCUP. HYG. 1981, 24(3) 297-301
Keywords: VARIATION (GENETICS), HUMAN, OCCUPATIONAL DISEASES,
OCCURRENCE, RISK (NLM)

****THE MORALS OF RISK ASSESSMENT.**
YODAIKEN RE
J. TOXICOL. ENVIRON. HEALTH 1980, 6(5/6) 1297-1301
Keywords: UNITED STATES, DISEASE MODELS, ANIMAL, ETHICS, HUMAN,
NEOPLASMS, OCCURRENCE, OCCUPATIONAL DISEASES,
ETIOLOGY, PROBABILITY, RISK (NLM)

RISK ASSESSMENT IN FEDERAL REGULATORY AGENCIES.
ALBERT RE
J. ENVIRON. PATHOL. TOXICOL. 1980, 4(2/3) 581-585
Keywords: DRUG EFFECTS, CARCINOGENS, DOSE-RESPONSE RELATIONSHIP,
DRUG, GOVERNMENT AGENCIES, RISK, UNITED STATES (NLM)

****Treatment of Risk in Environmental Impact Assessment**
Suter, G. W. ; Barnthouse, L. W. ; O'Neill, R. V.
Oak Ridge National Lab., TN.
Sponsor: Department of Energy, Washington, DC.
Report No.: CONF-8511148-1
1985 30p
DE86004781/XAB
Task force meeting on risk and policy analysis under conditions of uncertainity, Laxenburg, Austria, 25 Nov 1985.
Contract No.: AC05-84OR21400
The purpose of this paper is to distinguish risk assessment from other environmental assessment activities, define the role of uncertainty in risk assessment, explain and illustrate the utility of environmental risk assessment, and present research recommendations. (ERA citation 11:017373) (NTIS)

****WHITE HOUSE PERSPECTIVES ON RISK ASSESSMENT**
YOUNG AL
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y.,
USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO
PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT HUMAN LEGISLATION USA
EPA FOOD TOXICITY WATER POLLUTION CARCINOGEN FEDERAL GOVERNMENT

ASSESSMENT GUIDELINES

****The Environmental Protection Agency's Risk Assessment Guidelines.**
Preuss, Peter; EHRLICH, Alan M
US EPA, Office of Health and Environmenal Assessment 11/20/86.
Paper presented at the 79th Meeting of the Air
Pollution Control Association June 23, 1986.

QUANTITATIVE RISK ASSESSMENT AND PHARMACOKINETICS .... includes clinical and physiological pharmacokinetics, drug metabolism, acceptable daily intake (ADI), quantitative structure-activity relationaship (QSAR), dose-response relationship

****Application of Multimedia Pollutant Transport Models to Risk Analysis.**
McKone TE, Kastenberg WE
Lawrence Livermore National Lab., CA.
California Univ., Los Angeles. Dept. of Mechanical, Aerospace and Nuclear Engineering.
NTIS/DE86010157, 28p
UCRL-93068, CONF-860156-2, Contract W-7405-ENG-48
TD3: This paper will explore how multimedia models can be used in an environmental health risk analysis. The purpose of risk analysis is to assess and manage the adverse consequences of human activities. Multimedia models offer a way of organizing information about landscape and chemical properties in order to provide a comprehensive picture of the link between source and receptor for toxic chemicals. We begin with an overview of the risk-analysis process, including risk assessment and management. This is followed by a description of a multimedia model, called GEOTOX, which was developed for use in evaluating the health risks of trace elements, radionuclides, and organic chemicals. The model uses landscape properties such as run-off, precipitation, evaporation, biomass density, and soil properties and chemical properties such as molecular weight, vapor pressure, and solubility to determine how a substance partitions within the environment. The predicted environmental concentrations are used with exposure models and combined with health-effects data to estimate the potential human health risks associated with a given source. We demonstrate the use of GEOTOX by a sample application to three chemicals. We examine how these models can be used in risk assessment to better define the relationship between contaminant releases and resulting doses to humans. We also examine how these models can provide risk managers and decision makers with a means for determining the value of reducing uncertainties about chemical and landscape properties. (ERA citation 11:034728) Workshop on pollutant transport and accumulation in a multimedia environment, Los Angeles, CA, USA, 22 Jan 1986. (NLM)

IMPLICATIONS FOR RISK ASSESSMENT OF HOST FACTORS CAUSING LARGE PHARMACOKINETIC VARIATIONS
VESELL ES
AN INTERNATIONAL SYMPOSIUM ON ADVANCES IN HEALTH RISK ASSESSMENT FOR SYSTEMIC TOXICANTS AND CHEMICAL MIXTURES.
TOXICOL AND HEALTH; 1 (4). 1985 (RECD. 1986). 135-152.
BIOSIS COPYRIGHT: BIOL ABS. RRM HUMAN SMOKING ALCOHOL ORAL CONTRACEPTIVE DRUG-DRUG INTERACTION AGE SEX DIET DRUG TOXICITY

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PHARMACOGENETICS NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH EPA
CAS REGISTRY NUMBERS: 64-17-5 (NLM)

****INTERNATIONAL SYMPOSIUM ON PHYSICOCHEMICAL PROPERTIES AND THEIR ROLE IN ENVIRONMENTAL HAZARD ASSESSMENT JULY 1-3 1985**
ANON
PESTIC SCI; 17 (3). 1986. 256-325.
BIOSIS COPYRIGHT: BIOL. ABS. RRM MEETING PESTICIDE POLLUTION

A Lagrange-gamma multihit dose-response model for risk assessment
Janardan KG
Dep. Math., Eastern Michigan Univ., Ypsilanti
Math. Biosci.; VOL 80, ISS 2, 1986,209-22
CBAC COPYRIGHT: CHEM ABS The use of Lagrange-gamma multihit dose-response model (LMHM) to perform toxic chem. risk assessment is investigated. A biol. interpolation of the model in terms of the occurrence of k hits to cause toxicity response and a statistical interpretation in terms of a Lagrange-gamma tolerance d. are given. The parameters of the model are obtained by the method of max. likelihood and are used to est. a virtual safe dose. Application of the LMHM was illustrated using actual exptl. data on toxic responses induced by vinyl chloride [75-01-4], span oil [12738-60-2], DDP [17109-49-8], DMN [62-75-9], dieldrin [60-57-1], TCDD [1746-01-6], 2,4,5-T [93-76-5], and ethylenethiourea [96-45-7].
CAS REGISTRY NUMBERS: 50-29-3; 60-57-1; 62-75-9; 75-01-4; 93-76-5; 96-45-7; 1746-01-6; 12738-60-2 (NLM)

Macromolecule adducts, target dose and risk assessment.
Ehrenberg L, Osterman-Golkar S, T:ornqvist M
Department of Radiobiology, University of Stockholm, Sweden.
Prog Clin Biol Res; VOL 209B, 1986, P253-60
Keywords: Carcinogens *, Chemistry, Dose-Response Relationship, Drug, DNA ANALYSIS, Hemoglobins ANALYSIS, Human, Kinetics, Mutagens *, Risk, Support, Non-U.S. Gov't
CAS REGISTRY NUMBERS: 9007-49-2 (NLM)

THE MANAGEMENT OF RISK FOR INDUSTRIAL METALLIC AEROSOLS IN-VITRO ASSESSMENT OF DELIVERED DOSE PER UNIT EXPOSURE
STERN RM
OFTEDAL, P. AND A. BROGGER (ED.).
PROGRESS IN CLINICAL AND BIOLOGICA RESEARCH, VOL. 208.
RISK AND REASON: RISK ASSESSMENT IN RELATION TO ENVIRONMENTAL MUTAGENS AND CARCINOGENS; SATELLITE SYMPOSIUM TO THE FOURTH INTERNATIONAL CONFERENCE ON ENVIRONMENTAL MUTAGENS, OSLO, NORWAY, JUNE 21-22, 1985. XV+189P. ALAN R. LISS, INC.: NEW YORK, N.Y., USA. ILLUS. ISBN 0-8451-5058-8.; 0 (0). 1986. 121-124.
BIOSIS COPYRIGHT: BIOL ABS. RRM HUMAN NICKEL CHROMIUM OCCUPATIONAL HEALTH RISK

CAS REGISTRY NUMBERS: 7440-47-3; 7440-02-0 (NLM)

****Quantitative Determination of Smoke Toxicity Hazard - A Practical Approach for Current Use.**
Bukowski RW
National Bureau of Standards (NEL), Gaithersburg, MD. Fire Safety Technology Div.
NTIS/PB86-210713, 12p
TD3: The concepts of fire hazard assessment are discussed. The development of these concepts into the framework for a hazard assessment model is described. This model, which is actually a group of interacting models, is presented in terms of the component functions and the interactions necessary to accomplish a hazard analysis. The most critical research issues which must be resolved in order to use this hazard analysis model for practical problems are identified. Preliminary results of experiments to assess the predictive accuracy of the multi-compartment transport model used within the hazard model are presented. A simple, engineering approach to toxicity evaluation included in the current model is also discussed.
Final rept., (NLM)

****Quantitative Risk Assessment of Ionizing Radiation. Lessons from Chemical Carcinogens.**
Martinelli M, Ricci PF
ENEA, Casaccia (Italy). Direzione Central Studi - Unita Valutazioni Ambientali.
Electric Power Research Inst., Palo Alto, CA.
NTIS/DE86900962, U.S. Sales Only. Portions of this document are illegible in microfiche products., 14p
ENEA-RT/STUDI-84-1, IAEA-SM-266/77
TD3: This paper contains a synthesis of the information required to understand the mechanisms of dose-response commonly found in health risk analysis. The focus is on carcinogenesis from chemicals and ionizing radiations. There are two sections: the stochastic functions of carcinogenesis, and the role of animal study and epidemiology in producing the parameters of these functions. The emphasis is on how long-term experimental results in animals and epidemiological studies are used to determine the carcinogenic potencies of pollutants at the low doses normally encountered in the environment or in the workplace. The key conclusion is that (although there is much uncertainty that must be resolved) some of the necessary knowledge now exists to make judgements about the usefulness of dose-response models of cancers from environmental pollution, but if and only if the associated uncertainty is included in the results of the analysis. 21 refs. (ERA citation 11:026333) IAEA/WHO symposium on biological effects of low level radiation, Venice, Italy, 11 Apr 1983. (NLM)

****HAZARD ANALYSIS OF SUPERCRITICAL EXTRACTION**
RANDHAVA R, CALDERONE S
CHEM ENG PROG; 81 (6). 1985 (RECD. 1986). 59-62.
BIOSIS COPYRIGHT: BIOL ABS. RRM PETROCHEMICAL

Risk analysis of multiple environmental factors: radiation, zinc, cadmium, and calcium.
Matsubara J, Ishioka K, Shibata Y, Katoh K
Environ Res; VOL 40, ISS 2, 1986, P525-30
Simultaneous effects of four risk factors, i.e., radiation exposure at a sublethal dose and excessive administration of zinc or cadmium and calcium deprivation, were examined by animal experiments. Deaths among 360 mice within 30 days after the whole body irradiation of 524-617 rad gamma rays were observed under 36 experimental conditions set by all possible combinations of varied levels of the four risk factors. A similar experiment was conducted a month later to check the reproducibility by using another 360 mice. The reproducibility of the experiment was confirmed and therefore the data from the two experiments were pooled. The analysis of data based on a multiple logistic model suggested that administration of zinc acts protectively against radiation.
CAS REGISTRY NUMBERS: 7440-66-6; 7440-70-2 (NLM)

The role of pharmacokinetics in risk assessment.
Reitz RH, Fox TR, Watanabe PG
Basic Life Sci; VOL 38, 1986, P499-507
KEYWORDS: Animal, Comparative Study, Dose-Response Relationship, Drug Kinetics, Liver Neoplasms FAMILIAL & GENETIC/PATHOLOGY, Liver ANALYSIS, Mice, Mice, Inbred Strains, Models, Biological, Oncogenes * Risk Toxicology * (NLM)

The time to tumor approach in risk assessment.
Albert RE
Basic Life Sci; VOL 38, 1986, P551-6
The multistage model is currently a widely used mathematical tool in carcinogen risk assessment to obtain a low-dose linear non-threshold slope for estimating cancer risks and comparing carcinogens with respect to potency. However, the multistage model is a single pathway model, whereas biological evidence indicates that carcinogenesis proceeds through multiple pathways. Furthermore, recent studies suggest that carcinogens induce a generalized increase in the susceptibility to neoplastic transformation triggered as rare events by cell proliferation. Such evidence supports the dtn = c time to tumor model in a modified form.
CAS REGISTRY NUMBERS: 9007-49-2 (NLM)

**STRUCTURE-ACTIVITY CONSIDERATIONS IN RISK ASSESSMENT A SIMULATION STUDY
LAVENHAR SR, MACZKA CA
AN INTERNATIONAL SYMPOSIUM ON ADVANCES IN HEALTH RISK ASSESSMENT FOR SYSTEMIC TOXICANTS AND CHEMICAL MIXTURES.
TOXICOL IND HEALTH; 1 (4). 1985 (RECD. 1986). 249-260.
BIOSIS COPYRIGHT: BIOL ABS. RRM EPA CARCINOGENESIS
CAS REGISTRY NUMBERS: 20265-97-8; 17026-81-2; 7727-37-9; 7704-34-9; 6369-59-1; 5307-14-2; 5131-60-2; 3165-93-3; 2735-04-8; 1777-84-0; 823-40-5; 624-18-0; 619-17-0; 615-66-7; 615-28-1; 615-05-4; 541-69-5; 142-04-1; 137-17-7; 134-29-2; 121-14-2; 120-71-8; 119-34-6; 118-92-3; 106-47-8; 102-50-1; 99-59-2; 99-56-9; 99-55-8; 97-00-7; 95-83-0; 95-80-7; 95-79-4; 95-74-9; 95-53-4; 75-09-2 (NLM)

**The use of decision-theoretic approach in regulating toxicity.
Chen JJ, Gaylor DW
National Center for Toxicological Research, Jefferson, Arkansas 72079.
Regul Toxicol Pharmacol; VOL 6, ISS 3, 1986, P274-83
This paper presents a general decision model for quantitative risk analysis to help in solving the problem of setting the optimal exposure level of a potential carcinogen in regulatory decision-making. This model consists of a probability function and two loss functions. The probability function describes the dose-response relationship for a potential carcinogen at various exposure levels. The two loss functions include the cost of using a potential carcinogen, e.g., health loss, and the cost of not using the compound, e.g., economic loss. Using the principle of minimum expected loss, a fundamental formula for setting the optimal beneficial dose level is derived. The formula equates the probability function to a ratio of loss functions. The general form of loss functions is described in the paper. Under certain conditions, the current approach for quantitative risk assessment is a special situation of this general model. (NLM)

**QUANTITATIVE RISK ASSESSMENT FOR ENVIRONMENTAL AND OCCUPATIONAL HEALTH.
Hallenbeck, William H; Cunningham, KM
TYPE OF DOCUMENT: Book
Chelsea, Mich, Lewis Publishers, 1986
KEYWORDS: Health Risk Assessment -- Statistical Methods; Environmental Health; Industrial Hygiene
Call Number: RA427.3.H35 1986
EPA Libraries: ELA R5

**The Changing Role of Risk Assessment in Federal Regulation.
Preuss, Peter W; White, Paul D.
IN: Banbury Report 19: Risk Quantitation and Regulatory Policy. 331-342p.

Cold Spring Harbor Laboratory, 1985.

****Principles of Drug Action: the basis of Pharmacology. 2nd ed.**
Goldstein, Avram; Aronow, Lewis; Kalman, Sumner
New York, Wiley, 1974
KEYWORDS: Drugs -- Physiological effects
Call Numbers: RM300.G63
EPA Libraries: EJE OTS; EKB RTP; EKC GULF BREEZE QV38.G624P;
ELB CINC QP909.G56 1974

QUANTITATIVE RISK ASSESSMENT.
VAN RYZIN J
J. OCCUP. MED. 1980, 22(5) 321-326
Keywords: POLYETHYLENE GLYCOLS,ANIMAL,CARCINOGENS,DISEASE
MODELS, ANIMAL, DOSE-RESPONSE RELATIONSHIP, DRUG
HUMAN, NEOPLASMS, CHEMICALLY INDUCED, RISK (NLM)

QUANTITATIVE RISK ASSESSMENT.
FOOD SAFETY COUNCIL SCIENTIFIC COMMITTEE
FOOD COSMET. TOXICOL. 1980, 18(6) 711-734
Keywords: NITRILOTRIACETIC ACID,AFLATOXIN B1, ETHYLENE
THIOUREA, DIMETHYLNITROSAMINE, VINYL CHLORIDE,
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN,
HEXACHLOROBENZENE, BIS[CHLOROMETHYL]ETHER,
SODIUM SACCHARIN, DIELDRIN, P,P'-DDT, HUMAN,
ANIMAL, DOGS, GUINEA PIGS, MICE, RABBITS, RATS,
FOOD, ADVERSE EFFECTS, RISK, TOXICITY, MUTAGENS,
CARCINOGENS, MODELS, THEORETICAL, MATHEMATICS,
STATISTICS, DOSE-RESPONSE RELATIONSHIP, DRUG,
FATS OR OILS, RAPESEED OIL, CATS, ANALYSIS,
FOOD ANALYSIS, BOTULISM, DIOXINS, AFLATOXINS,
NITROSAMINES
CAS REGISTRY NUMBERS: 139-13-9, 1162-65-8, 96-45-7,
62-75-9, 75-01-4, 1746-01-6, 118-74-1, 542-88-1,
128-44-9, 60-57-1, 50-29-3 (NLM)

OVERVIEW OF SOME ASPECTS OF QUANTITATIVE RISK ASSESSMENT.
FISHBEIN L
J. TOXICOL. ENVIRON. HEALTH 1980, 6(5/6) 1275-1296
EIS: Epidemiology Information System
Keywords: LEUKEMIA, EXPERIMENTAL, CARCINOGENS, TOXICITY,
DOSE-RESPONSE RELATIONSHIP, DRUG, HUMAN, KINETICS,
MODELS, THEORETICAL, NEOPLASMS, CHEMICALLY INDUCED,
PROBABILITY, REVIEW, RISK, STATISTICS, TIME FACTORS
(NLM)

QUANTITATIVE RISK ASSESSMENT OF REPRODUCTIVE RISKS ASSOCIATED WITH POLYCHLORINATED BIPHENYL (PCB) EXPOSURE.
U.S. ENVIRONMENTAL PROTECTION AGENCY, HEALTH AND ENVIRONMENTAL REVIEW DIVISION
U.S. ENVIRON. PROT. AGENCY REP. 1983, 63 PP.
Keywords: AROCLOR 1254, WATER, HUMAN, PREGNANCY, INFANT, NEWBORN, INFANT, ANIMAL, RATS, ADVERSE EFFECTS, CHEMICAL EFFECTS, NEOPLASMS, OCCURRENCE, RISK, RHESUS MONKEYS, POLYCHLOROBIPHENYL COMPOUNDS, REPRODUCTION, BIRTH WEIGHT, MODELS, BIOLOGICAL, SKIN, MOTHERS, MILK, HUMAN, ADMINISTRATION AND DOSAGE, DOSE-RESPONSE RELATIONSHIP, CHEMICAL
CAS REGISTRY NUMBERS: 11097-69-1, 7732-18-5 (NLM)

QUANTITATIVE RISK ASSESSMENT.
FDA COMMENT: SUPPLEMENT 2 TITLE: PROPOSED SYSTEM FOR FOOD SAFETY ASSESSMENT.
SCIENTIFIC COMMITTEE, FOOD SAFETY COUNCIL.
FOOD COSMET. TOXICOL. 1978, 16(SUPPL. 2) 109-136
Keywords: SPECIES SPECIFICITY, ANIMAL, FOOD ADDITIVES, TOXICITY, FOOD ANALYSIS, FOOD CONTAMINATION, FOOD, STANDARDS, FAMILIAL AND GENETIC, CHEMICALLY INDUCED, HUMAN, LEGISLATION, FOOD, MUTAGENS, RESEARCH, RISK, TOXICOLOGY, METHODS (NLM)

****Dose-Response Analysis of Heavy Metal Toxicants in Man. Direct in VivoAssessment of Body Burden**
Ellis, K. J.
Brookhaven National Lab., Upton, NY.
Sponsor: Department of Energy, Washington, DC.
Report No.: BNL-38301; CONF-8506299-1
Jun 85 11p
19. annual conference on trace substances in environmental health,
Columbia, MO, USA, 3 Jun 1985.
DE86013915/XAB
Contract No.: AC02-76CH00016

Differences in uptake, metabolism, and excretion of heavy metals makes selection of a suitable biological media as a monitor of body burden very difficult. Exposure assessments based on body fluid levels can provide, at best, only general population estimates. The most frequently monitored media are blood, urine, nail or hair clippings, sweat, and saliva. Unfortunately each of these tissues can be influenced by recent exposure conditions and are not accurate indices of the total dose or body burden. However, direct in vivo measurements of body burden in humans, have recently been performed. This nuclear technique has focused on the measurements of kidney and liver cadmium (Cd) by neutron activation analysis and bone lead (Pb) determinations using x-ray fluorescence. The dose-response relationship for renal dysfunction based on the direct in vivo body burden for Cd is presented. The most probable Cd value for the kidney associated with renal impairment is approximately 35 mg. Approximately 10% of the subjects with 20 mg Cd in the kidney will have moderately elevated beta sub 2 -microglobulin, an early indicator of potential renal functional changes. 11 refs., 5 figs., 2 tabs. (ERA citation 11:005667) (NTIS)

****Management of Risk for Industrial Metallic Aerosols: In vitro Assessment of Delivered Dose per Unit Exposure**
Stern, R. M.
Svejsecentralen, Brondby (Denmark).
Report No.: PUB-85.42
c1985 18p
PB86-163250/XAB
Country of Publication: Denmark
The successful management of occupational health risk requires the availability of reliable information which not only permits the identification of sources of risk, but which, in the absence of quantitative measures of risk, permits at the very least, a relative ranking of risk from various sources and their contemplated alternatives so as to provide the necessary basis for priority setting. The routine use of such reliable tools for risk assessment would permit the orderly removal of high risk exposures and the reduction of exposure for high risk individuals or groups in absolute terms. (Copyright (c) The Danish Welding Institute Copenhagen, 1985). (NTIS)

Quantitative Studies of Environmental Risk: An Overview. Revision
Morgan, M. G.
Carnegie-Mellon Univ., Pittsburgh, PA. Dept. of Engineering and Public Policy.
Sponsor: Department of Energy, Washington, DC.
Report No.: DOE/ER/60138-T3
Dec 85 25p
Portions of this document are illegible in microfiche products.
DE86006148/XAB
Contract No.: AC02-83ER60138
A variety of basic ideas and issues in risk analysis, assessment and management are reviewed. A four part framework comprised of exposure processes, effects processes, human perception processes, and human valuation processes is introduced. The talk focuses on three fundamental problems that are commonly encountered in quantitative risk analysis: the selection of objective functions and management strategies, the characterization and treatment of scientific and technical uncertainty, and what to do when experts do not agree. 21 refs., 7 figs. (ERA citation 11:016295) (NTIS)

****Relationship of Safety Factors and Linear Extrapolation for isk Assessment**
(Final rept.)
Gaylor, D. W.
National Center for Toxicological Research, Jefferson, AR.
Report No.: NCTR-6069; FDA/NCTR-86/82
Nov 81 17p
PB86-161247/XAB

Safety factors often are applied to animal bioassay data on toxic effects to establish dosage levels for which it is hoped that low levels of disease risk are obtained. Risk is defined as the probability that an animal will develop a specific disease within a given period of time under a given set of experimental conditions. For example, the highest no observable effect level (NOEL) may be divided by 100 to establish an allowable dosage of a chemical. Since the NOEL is taken to be a relatively safe dose for the experimental animals, an additional safety factor is applied to allow for potentially higher sensitivities of humans compared to the experimental animals and for differences in sensitivities among individuals. The size of a safety factor may depend upon the seriousness of the biological effect. For example, a safety factor of 100 may be used for reversible disease conditions whereas a safety factor of 1000 may be employed for an irreversible disease such as cancer. The procedure does not provide an assessment of the risk that may result. (NTIS)

METHODS OF ESTIMATING AND MEASURING RISK

The assessment of major hazards: the factors affecting lethal toxicity estimates and the associated uncertainties
Withers RM J, Lees FP
Dep. Chem. Eng., Loughborough Univ. Technol., Loughborough/Leicestershire
Inst. Chem. Eng. Symp. Ser.; VOL 97, ISS Hazards Process Ind.: Hazards 9, 1986,185-99
CBAC COPYRIGHT: CHEM ABS Toxic gas hazard assessment review;Health hazard Of toxic gases, assessment of, lethal toxicity ests. in relation to;Hygiene Of hazardous gases, lethal toxicity estn. in relation to Industrial;Poisons Gases, hazard of, assessment of, lethal toxicity ests. in relation to (NLM)

The development and testing of "count-mass" concentration relationship for assessment of airborne mineral dust
Noweir MH
High Inst. Public Health, Univ. Alexandria, Hadra
Ann. Am. Conf. Gov. Ind. Hyg.; VOL 14,, 1986,177-83
CBAC COPYRIGHT: CHEM ABS Mineral dust limit exposure assessment Dust exposure mine permissible std;Air pollution By mineral dusts, in mines, occupational exposure to, assessment of, count-mass relationship for;Dust Occupational exposure to, in mines, assessment of, count-mass relationship for Mineral;Health hazard Of mineral dust, in mines, assessment of, permissible with in Occupational;Silicosis Mineral dust exposure permissive std. in control of;Standards For mineral dust concn. in mine air, in lung disease control. Legal and permissive (NLM)

****Elaboration of a practical method for priority selections and risk assessment among existing chemicals.**
SAMPAOLO A, BINETTI R
Lab. Applied Toxicology, Istituto Superiore di Sanita, Viale Regina Elena 299, 00161 Rome, Italy.
REGUL TOXICOL PHARMACOL; 6 (2). 1986. 129-154.
BIOSIS COPYRIGHT: BIOL ABS. An original pragmatic approach is presented for priority setting among existing chemicals, as a result of a study requested by the European Community Commission. On the basis of a set of physicochemical, toxicological, and ecotoxicological properties considered as fundamental for a first evaluation of the substance, the proposed system develops a score for each property in both the presence and absence of the datum. The properties in this first set are considered additive. Other information on the substance (quantity on the market, plurality of possible exposures, bioconcentration, environmental diffusion, persistence and size of risk population) is included in a second set of multiplier parameters. Through this simple and self-improving system it is possible to work out, using different

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final formulas, different lists for different needs. Using 30 well-known substances as examples with which to check the system, it is possible to see how these substances distribute themselves as to priority for environmental or for direct personal exposure. CAS REGISTRY NUMBERS: 7786-34-7; 7446-11-9; 3173-72-6; 1912-24-9; 540-59-0; 131-79-3; 127-18-4; 117-81-7; 111-44-4; 109-66-0; 107-30-2; 107-13-1; 106-93-4; 106-46-7; 100-42-5; 95-50-1; 94-74-6; 91-64-5; 87-86-5; 75-71-8; 75-34-3; 75-21-8; 74-83-9; 71-55-6; 71-43-2; 62-53-3; 58-89-9; 56-38-2; 52-68-6; 50-00-0 (NLM)

****A comparison of three risk assessment techniques for evaluating a hazardous waste landfill**
Budd WW
Program Environ. Sci. Reg. Plann., Washington State Univ., Pullman, WA 99164-4430
Hazard. Waste Hazard. Mater.; VOL 3, ISS 3, 1986,309-20
CBAC COPYRIGHT: CHEM ABS Hazardous waste landfill risk assessment;Health hazard Of waste landfills, risk assessment in relation to;Wastes Landfills for, risk assessment of Hazardous (NLM)

****Groundwater contamination site ranking methodology**
Olivieri AW, Eisenberg DM, Cooper RC
Eisenberg, Olivieri, and Associates, Inc., Oakland
J. Environ. Eng. (N. Y.); VOL 112, ISS 4, 1986,757-69
CBAC COPYRIGHT: CHEM ABS Risk assessment groundwater contamination landfill Hazardous waste groundwater contamination assessment;Wastes Land disposal site for, groundwater contamination in relation to, risk assessment method for estn. of Hazardous;Water pollution At hazardous waste site, of groundwater, risk assessment method for (NLM)

****On ranking chemicals for environmental hazard**
Halfon E, Reggiani MG
Natl. Water Res. Inst., Canada Cent. Inland Waters, Burlington
Environ. Sci. Technol.; VOL 20, ISS 11, 1986,1173-9
CBAC COPYRIGHT: CHEM ABS Org chem environmental hazard assessment;Amines Environmental pollution by, hazards of, assessment of Aryl;Cyprinodon variegatus Chlorobenzene toxicity to, environmental pollution hazard assessment in relation to;Daphnia magna Chlorobenzene toxicity to, environmental pollution hazard assessment in relation to;Environmental pollution By org. chem., hazards of, assessment of;Guppy Chlorobenzene toxicity to, environmental pollution hazard assessment in relation to;Lepomis macrochirus Chlorobenzene toxicity to, environmental pollution hazard assessment in relation to;Organic compounds Environmental pollution by, hazards of, assessment of;Photobacterium phosphoreum Chlorobenzene toxicity to, environmental pollution hazard assessment in relation to;Salmo gairdneri Chlorobenzene toxicity to, environmental pollution hazard assessment in relation to;Toxicity Of org. chem., environmental pollution hazard assessment in

relation to
CAS REGISTRY NUMBERS: 50-30-6; 62-53-3; 65-85-0; 71-43-2; 82-68-8; 87-61-6; 87-86-5; 88-06-2; 91-94-1; 92-52-4; 92-87-5; 95-50-1; 95-94-3; 100-02-7; 106-46-7; 106-47-8; 108-39-4; 108-70-3; 108-86-1; 108-88-3; 108-90-7; 108-95-2; 118-74-1; 120-82-1; 120-83-2; 123-31-9; 128-39-2; 541-73-1; 586-76-5; 608-93-5; 611-06-3; 634-66-2; 634-90-2; 634-93-5; 1817-47-6; 13029-08-8; 16606-02-3; 25265-76-3; 34883-43-7; 39485-83-1; 62796-65-0 (NLM)

Paradoxical elevation of plasma cholinesterase.
ALEXIOU NG, WILLIAMS JF, YEUNG HW, HUSTING EL
Dep. Comprehensive Med., Univ. South Florida Coll. Med., 12901 North 30th St., MDC 41 Tampa, Fla. 33612.
AM J PREV MED; 2 (4). 1986. 235-238.
BIOSIS COPYRIGHT: BIOL ABS. Biological monitoring of workers exposed to hazardous or toxic substances is common in industry. Plasma and red blood cell (RBC) cholinesterase activity level monitoring is used to detect early toxic effects of exposure to organophosphate and carbamate insecticides. However, the validity of plasma cholinesterase level monitoring alone in such exposures is of questionable value since depressed, normal, and elevated levels of activity in test results lead to risk assessment dilemmas. The finding of an elevated plasma cholinesterase level in an exposed plant pathologist led to referral for evaluation of test results. We reviewed the prevalence and significance of elevated plasma cholinesterase levels. The prevalence of elevated plasma cholinesterase values ranges from 1.0 percent to 12.9 percent, depending on the kind of testing and populations surveyed. The benefits and/or risks of elevated levels over time remain to be elucidated.
CAS REGISTRY NUMBERS: 14484-64-1

****PRESTO-II: A Low-Level Waste Environmental Transport and Risk Assessment Code.**
Fields DE, Emerson CJ, Chester RO, Little CA, Hiromoto G
Oak Ridge National Lab., TN.
Department of Energy, Washington, DC.
NTIS/DE86010061, Portions of this document are illegible in microfiche products. Original copy available until stock is exhausted., 470p
ORNL-5970, Contract AC05-84OR21400
TD3: PRESTO-II (Prediction of Radiation Effects from Shallow Trench Operations) is a computer code designed for the evaluation of possible health effects from shallow-land and, waste-disposal trenches. The model is intended to serve as a non-site-specific screening model for assessing radionuclide transport, ensuing exposure, and health impacts to a static local population for a 1000-year period following the end of disposal operations. Human exposure scenarios considered include normal releases (including leaching and operational spillage), human intrusion, and limited site farming or reclamation. Pathways and processes of transit from the trench to an individual or population include ground-water transport, overland flow, erosion, surface water

dilution, suspension, atmospheric transport, deposition, inhalation, external exposure, and ingestion of contaminated beef, milk, crops, and water. Both population doses and individual doses, as well as doses to the intruder and farmer, may be calculated. Cumulative health effects in terms of cancer deaths are calculated for the population over the 1000-year period using a life-table approach. Data are included for three example sites: Barnwell, South Carolina; Beatty, Nevada; and West Valley, New York. A code listing and example input for each of the three sites are included in the appendices to this report. (ERA citation 11:032761) (NLM)

Pulmonary function in asbestos cement workers: a dose-response study.

Finkelstein M

Br J Ind Med; VOL 43, ISS 6, 1986, P406-13

This study has found that residence time weighted exposure (asbestos dose) may be used to model the risk and extent of pulmonary function abnormalities in a cohort of asbestos cement workers. This parameter, which incorporates both exposure concentration and latency, had previously proved useful for modelling the risk of radiographic abnormalities in this cohort. Asbestos dose and smoking were independent and additive contributors to decreased pulmonary function. It was also found that lung function results could be used as surrogates for dose in the assessment of mortality risk in this cohort.
CAS REGISTRY NUMBERS: 1332-21-4 (NLM)

****Stream Transport and Agricultural Runoff of Pesticides for Exposure Assessment: A Methodology. Part A. Text and Appendices A through F.**

Donigian AS, Meier DW, Jowise PP

Anderson-Nichols and Co., Inc., Palo Alto, CA.

SPONSORING AGENCY: Environmental Research Lab., Athens, GA.

NTIS/PB86-199882, 774p

Contract EPA-068-03-3116

TD3: To predict the potential environmental or human health risk posed by agricultural pesticides, exposure assessments require the estimation of chemical concentrations in field runoff and in associated streams. In the report, a methodology is described for estimating the mean, maximum, frequency, and duration of pesticide concentrations, and the maximum daily pesticide runoff and its frequency for various agricultural crops and regions across the country. The Stream Transport and Agricultural Runoff of Pesticides for Exposure Assessment Methodology (called STREAM for convenience of reference) is designed for screening level analyses to provide the order-of-magnitude accuracy appropriate for exposure assessment with minimal investment in time and resources. Final rept. Aug 83-Sep 85, See also PB86-199890. Sponsored by Environmental Research Lab., Athens, GA. (NLM)

****Stream Transport and Agricultural Runoff of Pesticides for Exposure Assessment: A Methodology. Part B. Appendices G through K.**

Donigian AS, Meier DW, Jowise PP
Anderson-Nichols and Co., Inc., Palo Alto, CA.
SPONSORING AGENCY: Environmental Research Lab., Athens, GA.
NTIS/PB86-199890, 413p
Contract EPA-68-03-3116

TD3: To predict the potential environmental or human health risk posed by agricultural pesticides, exposure assessments require the estimation of chemical concentrations in field runoff and in associated streams. In the report, a methodology is described for estimating the mean, maximum, frequency, and duration of pesticide concentrations, and the maximum daily pesticide runoff and its frequency for various agricultural crops and regions across the country. The Stream Transport and Agricultural Runoff of Pesticides for Exposure Assessment Methodology (called STREAM) is designed for screening level analyses to provide the order-of-magnitude accuracy appropriate for exposure assessment with minimal investment in time and resources. The specific crops included in STREAM are corn, soybeans, cotton, wheat, and sorghum. Final rept. Aug 83-Sep 85, See also PB86-199882. Sponsored by Environmental Research Lab., Athens, GA. (NLM)

Erythrocyte protein conjugates as a principle of biological monitoring for pesticides.

Lewalter J, Korallus U
Address: Medical Department, Bayer AG, Leverkusen, F.R.G.
Toxicol Lett; VOL 33, ISS 1-3, 1986, P153-65

The determination of erythrocyte protein conjugates is recommended for monitoring worker's exposure to reactive pesticides or group of pesticides. Under the assumption that reversible and especially irreversible toxic effects of these substances occur in parallel to the formation of erythrocyte adducts, the determination of the amount of adduct can be seen as a parameter for monitoring stress and strain by these substances. The application of this method is demonstrated in some practical examples with several groups of compounds. In the case of unknown dose-effect relationships, the absence of conjugate formation in the erythrocyte initially will be considered as a no-toxic effect level, which can be substituted later by a tolerable substance-adduct concentration in the erythrocyte as more field experience has been gained. In contrast to the determination of chemicals and/or metabolites in the different body fluids, the examination of internal stress of substances by the determination of erythrocyte adducts has facilitated individual risk assessment for exposure to these substances. The appropriateness of individual tolerance values for active substances will be discussed. Sufficient valid and non-invasive methods are available for the routine detection of substance conjugates in erythrocytes. (NLM)

FUNDAMENTAL CARCINOGENIC PROCESSES AND THEIR IMPLICATIONS FOR LOW-DOS E RISK ASSESSMENT. UNCERTAINTY ESTIMATES FOR LOW-DOSE-RATE EXTRAPOLATIONS OF ANIMAL CARCINOGENICITY DATA.: LETTER.
MANTEL N
CANCER RES. 1978, 38(6) 1835-1838
Keywords: METHODS, ANIMAL, CARCINOGENS, ADMINISTRATIONAND DOSAGE, DOSE-RESPONSE RELATIONSHIP, DRUG, NEOPLASMS, EXPERIMENTAL, CHEMICALLY INDUCED, RESEARCH DESIGN, RISK (NLM)

EPIDEMIOLOGIC METHODS FOR HUMAN RISK ASSESSMENT
MACK TM, PIKE MC, CASAGRANDE JT
COLD SPRING HARBOR CONF. CELL PROLIFERATION 1977, 4(BOOK A) 1749-1763
Keywords: ISRAEL, HUMAN, RISK, EPIDEMIOLOGIC METHODS (NLM)

****Evaluation of occupational exposures: A proposed sampling method**
Brunn IO, Campbell JS, Hutzel RL
American Industrial Hygiene Association Journal Apr. 1986, Vol.47, No.4, p.229-235. Illus. 12 ref.
This method uses a 4h sampling strategy rather than the traditional 7 or 8h periods. 4h sampling periods have been found to improve monitoring efficiency without significantly reducing the precision or accuracy of exposure evaluation. The development of an Acceptable Risk Level (ARL) is another important element of the proposed method. An ARL is a variable based on risk assessment and risk management principles which have been established by the employer for each contaminant. (NLM)

*86-063914
****HEALTH RISK COMPARISON BETWEEN GROUNDWATER TRANSPORT MODELS AND FIELD DATA,**
HWANG SEONG T., EPA, DC,
ENV PROGRESS, FEB 86, V5, N1, P66(5)
JOURNAL ARTICLE THE POTENTIAL OF GROUNDWATER CONTAMINATION IS ONE OF THE MAJOR CONCERNS OVER LAND DISPOSAL OF HAZARDOUS WASTE. VARIOUS RISK ASSESSMENT APPROACHES ARE SURVEYED, AND RESULTS ARE PRESENTED OF CASE STUDIES COMPARING HEALTH RISK ASSESSMENT AND PLUME DELINEATION BASED ON STATE OF THE ART MODELING AND MONITORING DATA. DESPITE UNCERTAIN PARAMETERS, THE FATE AND TRANSPORT MODELS ARE AN IMPORTANT TOOL IN SUPPORTING THE HEALTH RISK ASSESSMENT, WHICH IS BASED ON MONITORING DATA OR CONDUCTED IN THE ABSENCE OF SUCH DATA. (ENVL)

****IMPROVING THE USE OF EPIDEMIOLOGIC DATA IN HEALTH RISK ASSESSMENT**
ERDREICH LS, BURNETT C
AN INTERNATIONAL SYMPOSIUM ON ADVANCES IN HEALTH RISK ASSESSMENT FOR SYSTEMIC TOXICANTS AND CHEMICAL MIXTURES.
TOXICOL IND HEALTH; 1 (4). 1985 (RECD. 1986). 65-82.
BIOSIS COPYRIGHT: BIOL ABS. RRM HUMAN WORKER DIOXINS 2 4 5-T CHLOROPHENOLS PHENOXYACETIC ACIDS SOFT TISSUE SARCOMA CARCINOGENESIS
CAS REGISTRY NUMBERS: 25167-82-2; 25167-80-0; 1746-01-6; 122-59-8; 93-76-5 (NLM)

Probabilistic Risk Assessment (PRA) Applications
Higgins, J. C.
Brookhaven National Lab., Upton, NY.
Sponsor: Nuclear Regulatory Commission, King of Prussia, PA. Region I.
Report No.: BNL-NUREG-51914
Jan 86 40p
Sponsored by Nuclear Regulatory Commission, King of Prussia, PA. Region I.
NUREG/CR-4372/XAB
The report presents the methodology developed to utilize the results of a plant specific Probabilistic Risk Assessment (PRA) for onsite plant review and inspection purposes. The report then presents the results performed using these techniques at the Limerick Generating Station. Additionally, system reliability insights obtained from the PRA were compared with pertinent NRC Inspection Procedures to determine if changes were warranted. Finally, conclusions regarding the usefulness methods and results are presented. (NTIS)

RISK ANALYSIS AND SCIENTIFIC METHOD.
Shrader-Frechette, Kristin S.
Hingham, Ma, Kluwer Academic, 1985
236 p.

****RISK ASSESSMENT EXTRAPOLATIONS AND PHYSIOLOGICAL MODELING**
CLEWELL H J III, ANDERSEN MW
AN INTERNATIONAL SYMPOSIUM ON ADVANCES IN HEALTH RISK ASSESSMENT FOR SYSTEMIC TOXICANTS AND CHEMICAL MIXTURES.
TOXICOL IND HEALTH;1 (4). 1985 (RECD. 1986). 111-132.
BIOSIS COPYRIGHT: BIOL ABS. RRM HUMAN ANIMAL RAT STYRENE CARBON TETRACHLORIDE VINYL CHLORIDE MONOMER TOXICOKINETICS
CAS REGISTRY NUMBERS: 24959-67-9; 630-08-0; 100-42-5; 75-01-4; 74-97-5; 74-95-3; 56-23-5 (NLM)

****WORKSHOPS FOR THE DEVELOPMENT OF METHODOLOGY FOR HEALTH RISK ASSESSMENT.**
Stara, Jerry; et al.
Cincinnati, OH ENVIRONMENTAL CRITERIA ASSESSMENT Office, USEPA, Aug. 1986.
PB84-227 008
EPA Libraries EJB HQ
EPA 600/S9-85/027

****SCREEN; Identifying Effective Input Variables (Software)**
Vaurio, J. K.
Argonne National Lab., IL.
Report No.: ANL/NESC-1002
1985 mag tape
Price includes documentation. Tapes can be prepared in most recording modes for one-half inch tape. Specify recording mode desired. Call NTIS Computer Products if you have questions.
DE8604002/XAB
SCREEN is a statistical sensitivity analysis procedure for ranking input data of large computer codes in the order of sensitivity importance. The problem is to determine a group of the most important input parameters of a computer code wahen the total number of input variables is large, so large that standard sensitivity evaluations varying each input variable (one or two at a time) would be prohibitively expensive. Maxima of 1000 input parameter variables 6 output/consequence variables When selecting the cases to be run (knot-points), eight optional distributions are available for the input parameters, including uniform, exponential, normal, truncated normal, log-normal, and beta distributions...Software Description: IBM370,303x. FORTRAN IV (93%) and Assembler language (7%).. OS/MVT, MVS. 250K bytes of memory are required for execution. (NTIS)

****Technical Support Document for Water Quality-Based Toxics Control**
Brandes, R. ; Newton, B. ; Owens, M. ; Southerland, E.
Environmental Protection Agency, Washington, DC.
Office of Water Enforcement and Permits.
Report No.: EPA/440/4-85/032
PB86-150067/XAB
Sep 85 114p
The reports provides guidance for each step in the water quality-based toxics control process from screening to compliance monitoring; Section 1 discusses the advantages and disadvantages of two approaches to toxics control: toxicity testing and chemical specific assessment; Section 2, Water Quality Criteria and Standards, contains a brief discussion of water quality standards and the derivation of ambient criteria to attain and maintain standards; Section 3, Effluent Characterization, describes procedures that provide the data needed to make decisions regarding toxic impact. A two-tiered assessment approach is recommended; Section 4, Human Health Hazard Assessment, describes procedures for assessing potential human health hazards associated with effluents; Section

5, Exposure assessment, describes procedures for estimating exposure to toxicants and calculating effluent requirements based on ambient criteria and exposure; Section 6, Permit Requirements, describes methods to develop water quality-based NPDES permits. (NTIS)

Use of distribution coefficients for the evaluation of soils with regard to their radiological risk

Carini F, Silva S, Fontana P

Fac. Agraria, Univ. Cattolica Sacro Cuore, Piacenza

Ann. Fac. Agrar. (Univ. Cattol. Sacro Cuore); VOL 25, ISS 1, 1985,79-96

CBAC COPYRIGHT: CHEM ABS Radionuclide soil plant radiol risk;Alfalfa Radioelements uptake by, from soils, transfer factors for, radiol. risk assessment in relation to;Carrot Radioelements uptake by, from soils, transfer factors for, radiol. risk assessment in relation to;Corn Radioelements uptake by, from soils, transfer factors for, radiol. risk assessment in relation to;Health physics Radioelements of soils distribution coeffs. and transfer factors to plants in relation to Environmental;Plant metabolism Of radioelements, from soils, transfer factors for, radiol. risk assessment in relation to;Radioelements Of soils, plant transfer factors for, radiol. risk assessment in relation to;Soils Radioelements of, plant transfer factors for, radiol. risk assessment in relation to;Tomato Radioelements uptake by, from soils, transfer factors for, radiol. risk assessment in relation to

CAS REGISTRY NUMBERS: 13966-31-9; 13967-70-9; 13981-38-9; 14158-31-7; 14596-12-4 (NLM)

HEALTH RISKS

GENERAL

BASIC TOXICOLOGY FUNDAMENTALS TARGET ORGANS AND RISK ASSESSMENT
LU, F. C. BASIC TOXICOLOGY: FUNDAMENTALS, TARGET ORGANS, AND RISK ASSESSMENT. XVI+276P. HEMISPHERE PUBLISHING CORPORATION: NEW YORK, N.Y., USA; LONDON, ENGLAND (DIST. OUTSIDE THE U.S. BY MCGRAW-HILL INTERNATIONAL BOOK CO.: AUCKLAND, NEW ZEALAND; LONDON, ENGLAND. ILLUS. ISBN 0-89116-389-1(CLOTH); ISBN 0-89116-468-5(PAPER).; 0 (0). 1985 (RECD. 1986). XVI+276P.
BIOSIS COPYRIGHT: BIOL ABS. RRM BOOK TOXICOKINETICS CARCINOGENESIS MUTAGENESIS TERATOGENESIS (NLM)

****BIOTECHNOLOGY RISKS A REPLACEMENT FOR CHEMICAL CONTROL OF ORGANISMS**
GILLETT JW
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT CROP ANIMAL PESTICIDE BIOCONTROL RECOMBINANT DNA GENETIC ENGINEERING RISK ASSESSMENT AGRICULTURAL PEST PUBLIC HEALTH PEST (NLM)

Geographic distribution of unexplained low birth weight.
Jason CJ, Samuhel ME, Glick BJ, Welsh AK
Centers for Disease Control, Perinatal and Child Health Division, Atlanta, GA 30333.
J Occup Med; VOL 28, ISS 8, 1986, P728-40
Low birth weight, largely in the form of intrauterine growth retardation, has been used in animal studies as a sensitive indicator of adverse reproductive outcomes to suspect toxic agents. Methodological problems have severely curtailed studies of low birth weight for human risk assessment. For white and black births, we explore the use of statistical techniques to adjust for maternal risk factors and to isolate US counties having a significantly elevated rate of unexplained low-birth-weight births in 1979. The data are derived from individual birth certificate information made available by the National Center for Health Statistics. Removing variation due to socioeconomic and other intrinsic factors available on birth certificates, clusters of high-risk counties appear. This paper discusses the methodology used to identify these counties. (NLM)

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Heavy Gas and Risk Assessment - 3. [Proceedings of the 3rd
Symposium on Heavy Gas and Risk Assessment, Bonn,
Wissenschaftszentrum, November 12-13, 1984]
1986,388 pp.
Hartwig S, Editor
CBAC COPYRIGHT: CHEM ABS Book heavy gas risk assessment Safety
dense gas book;Gases Safety of, risk assessment of Dense;Safety
Of dense gases, risk assessment of (NLM)

**AN INTERNATIONAL SYMPOSIUM ON ADVANCES IN HEALTH RISK ASSESSMENT
FOR SYSTEMIC TOXICANTS AND CHEMICAL MIXTURES**
STARA JF, ERDREICH LS
TOXICOL IND HEALTH; 1 (4). 1985 (RECD. 1986). 1-333.
BIOSIS COPYRIGHT: BIOL ABS. RRM MEETING
CAS REGISTRY NUMBERS: 62450-07-1; 62450-06-0; 34465-46-8;
33857-26-0; 23746-34-1;22248-79-9; 21884-44-6; 14901-08-7;
13292-46-1; 13256-22-9;12789-03-6; 12663-46-6; 12192-57-3;
10034-93-2; 8001-35-2; 7440-47-3; 7440-43-9; 7440-38-2;
5307-14-2; 5131-60-2; 3771-19-5; 3761-53-3; 2385-85-5;
2303-16-4; 2243-62-1; 2164-17-2; 1937-37-7; 1836-75-5; 1746-01-6;
1582-09-8; 1330-20-7; 1024-57-3; 924-16-3; 842-07-9; 609-20-1;
604-75-1; 602-87-9; 590-96-5; 542-88-1; 532-82-1; 510-15-6;
492-80-8; 309-00-2; 303-47-9; 218-01-9; 206-44-0; 194-59-2;
192-97-2; 156-10-5; 151-56-4; 150-68-5; 143-50-0; 142-46-1;
141-90-2; 140-57-8; 139-94-6; 139-65-1; 137-17-7; 136-40-3;
135-88-6; 135-20-6; 133-90-4; 132-32-1; 127-18-4; 126-07-8;
123-91-1; 120-71-8; 120-62-7; 120-58-1; 120-12-7; 118-74-1;
117-84-0; 117-81-7; 117-79-3; 115-32-2; 112-40-3; 111-44-4;
110-02-1; 108-88-3; 108-46-3; 108-38-3; 107-06-2; 106-42-3;
105-67-9; 103-23-1; 103-03-7; 101-80-4; 101-61-1; 101-14-4;
100-75-4; 99-59-2; 99-55-8; 97-56-3; 95-83-0; 95-80-7; 95-79-4;
95-53-4; 95-47-6; 94-59-7; 94-58-6; 94-52-0; 92-87-5; 92-83-1;
92-67-1; 92-62-6; 92-52-4; 91-59-8; 90-94-8; 88-06-2; 87-29-6;
86-74-8; 85-68-7; 84-74-2; 84-66-2; 82-28-0; 79-34-5; 79-01-6;
76-44-8; 75-21-8; 75-01-4; 72-56-0; 72-55-9; 71-55-6; 71-43-2;
68-22-4; 67-72-1; 67-66-3; 64-17-5; 62-75-9; 62-55-5; 61-82-5;
60-57-1; 60-11-7; 59-89-2; 58-89-9; 58-08-2; 57-97-6; 57-57-8;
57-30-7; 57-14-7; 56-55-3; 56-23-5; 55-18-5; 53-70-3; 51-98-9;
50-32-8; 50-18-0; 50-00-0 (NLM)

**ISSUES ON HEALTH RISK ASSESSMENT AT HAZARDOUS WASTE SITES AND
RESOURCE RECOVERY FACILITIES IN REGION II**
CAM V
AN INTERNATIONAL SYMPOSIUM ON ADVANCES IN HEALTH RISK ASSESSMENT
FOR SYSTEMIC TOXICANTS AND CHEMICAL MIXTURES.
TOXICOL IND HEALTH;
1 (4). 1985 (RECD. 1986). 271-276.
BIOSIS COPYRIGHT: BIOL ABS. RRM LAND DISPOSAL SUPERFUND
PRIORITY POLLUTANT USA EPA
CAS REGISTRY NUMBERS: 7647-01-0; 7440-47-3; 7440-43-9; 7440-41-7;
7440-38-2; 7440-02-0; 7439-97-6; 7439-92-1; 630-08-0; 124-38-9;
50-32-8; 50-00-0 (NLM)

****Location of Mines and Factors Affecting Exposure.**
Anon
Buc and Associates, Washington, DC.
Environmental Protection Agency, Washington, DC. Office of Solid Waste.
NTIS/PB86-219409, 79p
Contract EPA-68-01-7234
TD3: The report provides a qualitative perspective on the risks that mining wastes pose by first determining the locations of mines and potential receptor populations (human and wildlife) and then comparing selected factors which affect exposure of mine sites with those at hazardous waste sites. The approach represents the first stage of exposure analysis, one of the components of a formal risk assessment. However, transport, fate, and effects of contaminants released from mine waste are not covered by the report. Final draft rept. Sponsored by Environmental Protection Agency, Washington, DC. Office of Solid Waste. (NTIS)

Permeation of chemicals through the skin
Schwope AD
Arthur D. Little, Inc., Cambridge
ASTM Spec. Tech. Publ.; VOL 900, ISS Perform. Prot. Clothing, 1986,221-34
CBAC COPYRIGHT: CHEM ABS An overall risk/benefit anal. relative to the use of chem. protective clothing for protection from potentially harmful chems. must ultimately consider the barrier effectiveness of the skin to the chems. in question. In this context, the function and behavior of skin as a barrier material is studied, beginning with a brief discussion of risk assessment from the perspective of skin permeation. Next, the compn. of and mechanisms for transport through skin are described. Skin permeation data from several sources are then presented. The paper concludes with a series of questions intended to stimulate thinking and lab. work toward developing an understanding of the crit. factors in the mechanism described. Hopefully this information will be a starting point for those involved with clothing testing and selection, but with little background on the subject of skin, to begin to consider the role and importance of the skin in protecting the body. (NLM)

****A proposal for the reduction of animal numbers required for the acute toxicity to fish test (LC50 determination)**
Douglas MT, Chanter DO, Pell IB, Burney GM
Huntingdon Res. Cent. plc, Huntingdon/Cambridgeshire
Aquat. Toxicol.; VOL 8, ISS 4, 1986,243-9
CBAC COPYRIGHT: CHEM ABS Juvenile rainbow trout (Salmo gairdneri) were exposed to 10 common industrial and agricultural chems. in a series of acute toxicity tests to provide data for the evaluation of the test design currently employed in hazard assessment for novel chems. in the aquatic environment. Anal. of

these data revealed that the widely employed design of 10 fish at each of 5 concns. covering 1 order of magnitude could be modified to 1 of 7 fish at each of 4 concns. with minimal redn. in the precision of the result, i.e., the LC50 (median lethal concn.) value. The adoption of this modification to test design would result in a redn. of .apprx.40% of the no. of exptl. animals used in bioassays.
CAS REGISTRY NUMBERS: 60-57-1; 62-53-3; 63-25-2; 87-86-5; 120-82-1; 121-75-5; 141-78-6; 573-58-0; 1461-22-9; 27176-87-0 (NLM)

RADIATION AND AN INDEX OF HARM, IN: RISK AND REASON: RISK ASSESSMENT IN RELATION TO ENVIRONMENTAL MUTAGENS AND CARCINOGENS
POCHIN EE
PROG CLIN BIOL RES; 208:73-84,1986
Keywords: RADIATION, MAMMAL,HUMAN, HOMO SAPIENS (NLM)

****TERATOGENICITY STUDIES IN THE RISK ASSESSMENT FOR CAFFEINE**
SULLIVAN FM
TERATOLOGY; 33(2):48A,1986
Keywords: GROWTH, MUSCULOSKELETAL SYSTEM, CAFFEINE
CAS REGISTRY NUMBERS: 58-08-2 (NLM)

****SYMPOSIUM: RISK ASSESSMENT FOR DEVELOPMENTAL TOXICITY**
SCHARDEIN JL
FUNDAM APPL TOXICOL; 5:607-608, 1985 (NLM)

****TERATOGENICITY STUDIES IN THE RISK ASSESSMENT**
SULLIVAN FM
INTERNATIONAL SYMPOSIUM ON PHARMACOKINETICS IN TERATOGENESIS, WEST BERLIN, WEST GERMANY, SEPT. 13-15, 1985.
TERATOLOGY; 33 (2). 1986. 48A.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT RODENT CAFFEINE TERATOGEN LOW BIRTHWEIGHT RETARDED OSSIFICATION PHARMACOKINETICS CARDIOVASCULAR ACTION ENDOCRINE ACTION
CAS REGISTRY NUMBERS: 58-08-2 (NLM)

****THE VALIDITY OF RISK ASSESSMENT FOR RADON DAUGHTER INDUCED LUNG CANCER**
STEINHAEUSLER F
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT HUMAN EPIDEMIOLOGICAL STUDIES ANIMAL INHALATION STUDIES THEORETICAL DOSIMETRIC MODELING OCCUPATIONAL EXPOSURE NON-OCCUPATIONAL EXPOSURE
CAS REGISTRY NUMBERS: 10043-92-2 (NLM)

**CRITICAL ASSUMPTIONS IN RISK ASSESSMENT OF SOIL CONTAMINATED WITH 2 3 7 8 TETRACHLORODIBENZO-P-DIOXIN DIOXIN
PAUSTENBACH DJ, SHU HP, MURRAY FJ
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PA AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT CHILD FISH FLY ASH USA EUROPE DERMAL ORAL SOIL POLLUTION AIR POLLUTION WATER POLLUTION
CAS REGISTRY NUMBERS: 1746-01-6; 828-00-2 (NLM)

**BIOTECHNOLOGY RISKS A REPLACEMENT FOR CHEMICAL CONTROL OF ORGANISMS
GILLETT JW
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT CROP ANIMAL PESTICIDE BIOCONTROL RECOMBINANT DNA GENETIC ENGINEERING RISK ASSESSMENT AGRICULTURAL PEST PUBLIC HEALTH PEST (NLM)

**THE CULTURE OF RISK ASSESSMENT AT EPA
YOSIE TF
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT POLLUTION (NLM)

**APPROACHES TO CHEMICAL HAZARD ASSESSMENT IN THE PRESENCE OF LIMITED DATA
FARLAND WH, AUER CW
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT HUMAN EPA POLLUTION (NLM)

**UNCERTAINTIES IN DIOXIN RISK ASSESSMENT
HOUK VN
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT HUMAN ANIMAL MISSOURI USA CARCINOGEN SOIL POLLUTION
CAS REGISTRY NUMBERS: 828-00-2 (NLM)

**CHROMOSOME ABERRATIONS INDUCED IN HUMAN LYMPHOCYTES BY LOW DOSES

OF COBALT-60 GAMMA-RAYS DELIVERED AT DIFFERENT DOSE RATES
FABRY L
19TH ANNUAL MEETING OF THE EUROPEAN SOCIETY FOR RADIATION BIOLOGY, PRAGUE, CZECHOSLOVAKIA, AUG. 26-30, 1985. INT J RADIAT BIOL RELAT STUD PHYS CHEM MED; 49 (4). 1986. 720.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT RADIATION EXPOSURE GENETIC RISK ASSESSMENT
CAS REGISTRY NUMBERS: 10198-40-0 (NLM)

THE DEVELOPMENT AND RISK ASSESSMENT OF A GENETICALLY ENGINEERED MICROBIAL INSECTICIDE
KAUFMAN RJ
SYMPOSIUM ON MOLECULAR ENTOMOLOGY HELD AT THE 15TH ANNUAL MEETING OF THE UCLA (UNIVERSITY OF CALIFORNIA-LOS ANGELES) SYMPOSIA ON MOLECULAR AND CELLULAR BIOLOGY, MAR. 20-APR. 6, 1986. J CELL BIOCHEM SUPPL; 0 (10 PART C). 1986. 94.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT BACILLUS-THURINGIENSIS-KURSTAKI PSEUDOMONAS-FLUORESCENS CORN DELTA ENDOTOXIN GENETIC ENGINEERING ENVIRONMENTAL HAZARD MICROBIAL CONTROL
CAS REGISTRY NUMBERS: 11034-88-1 (NLM)

BASIC TOXICOLOGY FUNDAMENTALS TARGET ORGANS AND RISK ASSESSMENT
LU, F. C. BASIC TOXICOLOGY: FUNDAMENTALS, TARGET ORGANS, AND RISK ASSESSMENT. XVI+276P. HEMISPHERE PUBLISHING CORPORATION: NEW YORK, N.Y., USA; LONDON, ENGLAND (DIST. OUTSIDE THE U.S. BY MCGRAW-HILL INTERNATIONAL BOOK CO.: AUCKLAND, NEW ZEALAND; LONDON, ENGLAND. ILLUS. ISBN 0-89116-389-1(CLOTH); ISBN 0-89116-468-5(PAPER).; 0 (0). 1985 (RECD. 1986). XVI+276P.
BIOSIS COPYRIGHT: BIOL ABS. RRM BOOK TOXICOKINETICS CARCINOGENESIS MUTAGENESIS TERATOGENESIS (NLM)

A critical review of multigeneration studies.
CHRISTIAN MS
Argus Res. Lab., Inc., 905 Sheey Dr., Horsham, PA 19044,
J AM COLL TOXICOL; 5 (2). 1986. 161-180.
BIOSIS COPYRIGHT: BIOL ABS. The Chemical Manufacturers Association has an ongoing project to summarize information required to evaluate various approaches to assessment of reproductive hazards in the workplace. The information presented in this manuscript was generated as part of that project and included (1) a search of the published literature to identify, among other items (a) the procedures used in animal toxicological reproduction testing and (b) whether the database identified could be used for determining the number of generations and litters per generation to be required to provide reproductive risk assessment data for use in a multigeneration evaluation; and (2) a review and tabulation of information on scientific rationale, regulatory history and US and international regulatory guidelines for conduct of animal toxicological reproduction testing procedures. The search and review were inclusive only to their limits, and reports may have been omitted from

consideration because they were unobtainable or unidentified. Of 817 publications identified as relevant, it was possible to obtain at least 73 rat or mouse multigeneration studies that met the minimal criteria of at least 4 animals per dosage group and a premating dosage period of at least 10 days (female animals) or 60 days (male animals). Of these 73 studies, 35 were "negative" (no effect reported) and 38 were "positive" (some effect reported). Twenty of the positive studies had effects that were more severe or first detected in the sec or subsequent generations than in the first generation. These 20 studies were selected for use in identifying appropriate testing procedures because each (1) reported one or more primary adult or litter reproductive effects, (2) had adequate controls, (3) had more than one dosage group, and (4) used the rat as the test species. The chemicals tested in these 20 studies were classified as insecticides (4 studies), herbicides (3 studies), food/food additives (3 studies), fungicides (2 studies), drugs (2 studies), a metal, an "other agent," a hydrocarbon, a detergent, a plasticizer, and a dioxin (1 study each). These 20 studies were critically reviewed to identify adult and litter primary reproductive effects (present in the absence of adult toxicity) and adult toxic effects. In general, the quality of the published data was poor. Some measurement of adult toxicity was reported in 18 of the 20 studies; only 13 of these 18 studies reported an effect. Each of the 20 studies reported some evaluation of litter parameters; each had some effect. Only 10 of the 20 studies reported an adult primary reproductive effect (9 in the first generation and 1 in the second generation). The affected second-generation adults came from a population of compromised first-generation pups (primary litter reproductive effects: decreased viability and litter weight). In contrast, all 20 studies had a primary litter reproductive effect present in the first generation Observations for control litters were erratic from litter to litter, although findings from the first litter from generation to generation were essentially reproducible. Three of the 9 studies with "increasing" primary reproductive effects were of agents with bioaccumulative properties. On the basis of this limited sample size (20 studies), it appears that if the objective the study is to identify the lowest dosage producing a primary reproductive effect, litter parameters are those that are most sensitive, and one generation appears to be sufficient for evaluation. If there is evidence of bioaccumulat (NLM)

****Priority setting for industrial chemicals of health and environmental relevance.**
SCHULZE H, MUECKE W
Bavarian State Ministry Regional Development and Environment Protection, Rosenkavalieplatz 2, D-8000 Muenchen 81, FR Germany.
CHEMOSPHERE; 15 (6). 1986. 771-780.
BIOSIS COPYRIGHT: BIOL ABS. Decision-making for the reduction of health and far-reaching ecological hazards caused by environmental chemicals must be based on a scientifically founded risk assessment. An Advisory Committee on Existing Chemicals of

Environmental Relevance found an approach for dealing with industrial chemicals which are already on the market. Selection was carried out on the basis of criteria applied first as an aggregate and then individually in combination. (NLM)

Macromolecule adducts, target dose and risk assessment.
Ehrenberg L, Osterman-Golkar S, T:ornqvist M
Department of Radiobiology, University of Stockholm, Sweden.
Prog Clin Biol Res; VOL 209B, 1986, P253-60
Keywords: Carcinogens *, Chemistry, Dose-Response Relationship, Drug, DNA ANALYSIS, Hemoglobins ANALYSIS, Human, Kinetics, Mutagens *, Risk, Support, Non-U.S. Gov't
CAS REGISTRY NUMBERS: 9007-49-2 (NLM)

A risk assessment of lung cancer due to indoor airborne radon and radon daughters
Cunningham-Burns KM
Health Sci. Cent., Univ. Illinois, Chicago
Diss. Abstr. Int. B 1986, 47(1), 155-6; 1985,201 pp.
CBAC COPYRIGHT: CHEM ABS Radon lung cancer building Health physics radon lung cancer;Buildings Radon in, risk assessment of lung cancer from;Health physics Of radon in buildings;Lung From radon in buildings, risk of
CAS REGISTRY NUMBERS: 10043-92-2 (NLM)

Risk assessment approaches for ground water contamination by pesticides and other organic substances
Stara JF, Patterson J, Dourson ML
U.S. Environ. Prot. Agency, Cincinnati
ACS Symp. Ser.; VOL 315, ISS Eval. Pestic. Ground Water, 1986,445-61
CBAC COPYRIGHT: CHEM ABS Groundwater org risk assessment review Pesticide groundwater risk assessment review Pollution groundwater risk assessment review;Organic compounds Groundwater pollution by, health hazard of, assessment of;Pesticides Groundwater pollution by, health hazard of, assessment of;Water pollution By pesticides and org. compds., health hazards of, assessment of (NLM)

Risk assessment of trace element emissions from an urban oil-fired power plant
Saperstein MD
Univ. California, Los Angeles
Diss. Abstr. Int. B 1986, 47(4), 1473; 1986,125 pp.
CBAC COPYRIGHT: CHEM ABS Trace element pollution power plant Flue gas trace element pollution Oil fired power trace element;Air pollution By trace elements and flue gases from urban oil-fired power plant, risk assessment of;Flue gases Air pollution by trace elements in, from urban oil-fired power plant, risk assessment of;Trace elements Air pollution by flue gases contg., from urban oil-fired power plant, risk assessment of

(NLM)

A RISK ASSESSMENT PROGRAM FOR TOXICOLOGY LABORATORY WASTE DISPOSAL
NEMCHIN RG, COCO JA
WALTERS, D. B. AND C. W. JAMESON (ED.).
HEALTH AND SAFETY FOR TOXICITY TESTING: SYMPOSIUM ON CHEMISTRY AND SAFETY FOR TOXICITY TESTING OF ENVIRONMENTAL CHEMICALS HELD AT THE 183RD NATIONAL CHEMICAL SOCIETY MEETING, LAS VEGAS, NEV., USA, MAR. 1982.
XV+339P. BUTTERWORTH PUBLISHERS: STONEHAM, MASS., USA; LONDON, ENGLAND. ILLUS. ISBN 0-250-40546-6.; 0 (0). 1984 (RECD. 1986). 283-298.
BIOSIS COPYRIGHT: BIOL ABS. RRM LAND DISPOSAL HAZARDOUS WASTE INCINERATION MODEL LEGISLATION (NLM)

A suggested role of combustion toxicity in fire risk assessment
Alexeeff GV, Packham SC
California Public Health Found., Berkeley, CA 94704
J Test. Eval.; VOL 14, ISS 6, 1986,321-5
CBAC COPYRIGHT: CHEM ABS Fire combustion product toxicity Health risk fire combustion product;Combustion Health hazard of products of, assessment of;Combustion Products of, toxicity of, in fires, risk assessment in relation to;Health hazard Of combustion product exposure, in fires, assessment of (NLM)

****DETERMINATION OF AIR ROUTE EXPOSURE TO PESTICIDES USED IN AND AROUND THE HOME**
LEWIS RG, BOND AE, JOHNSON DE, HSU J-P
192ND AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, ANAHEIM, CALIF., USA, SEPT. 7-12, 1986.
ABSTR PAP AM CHEM SOC; 192 (0). 1986.
NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT EXPOSURE RISK ASSESSMENT (NLM)

EPIDEMIOLOGIC CONSIDERATIONS IN THE DESIGN OF TOXICOLOGIC STUDIES: AN APPROACH TO RISK ASSESSMENT IN HUMANS
WOODS JS
FED. PROC. 1979, 38(5) 1891-1896
Keywords: VINYL CHLORIDE, HUMAN, ANIMAL, CHEMICALLY INDUCED, ENVIRONMENTAL EXPOSURE, EPIDEMIOLOGIC METHODS, RISK, TIME FACTORS, ANGIOSARCOMA, STATISTICS, CARCINOGENS, TOXICOLOGY, DISEASE MODELS, ANIMAL, METHODS, DOSE-RESPONSE RELATIONSHIP, DRUG, LIVER NEOPLASMS, VINYL COMPOUNDS, MUTATION, SPECIES SPECIFICITY
CAS REGISTRY NUMBERS: 75-01-4

Development and risk assessment of a genetically engineered microbial insecticide
Kaufman, R.J.
Sixth International Congress of Pesticide Chemistry 8630083
Ottawa (Canada) 10-15 Aug 1986
International Union of Pure and Applied Chemistry (IUPAC)
Blackwell Scientific Publications, Osney Mead, Oxford
OX2 0EL (UK),
Paper No. 2F-01 (CPI)

****Management of Risk for Industrial Metallic Aerosols. In Vitro Assessment of Delivered Dose Per Unit Exposure**
Stern, R. M.
Svejsecentralen, Glostrup (Denmark).
Report No.: SVC-85.42
1985 14p
EFP-84.
U.S. Sales Only. Portions of this document are illegible in microfiche products.
DE86752100/XAB
Country of Publication: Denmark
For many complex industrial exposures, and for the case of metallic aerosols in particular, causality between adverse health effects and exposures has been demonstrated without characterization of the causative agent beyond the presence of the putative toxic element. For the case of nickel and chromium in particular, both historical human epidemiological and experimental animal data clearly demonstrate an extremely wide range of potencies for complex occupational exposure and for pure substances which have, in one form or other, one of these elements in common. With only few exceptions, current practice for the control of these and most metals is to regulate exposure of the element per se, although hexavalent chromium (CrVI) and soluble (unspecified further) nickel have specific, stringent exposure limits. The mechanisms underlying the variation in potency have been obscure, but it is evident that cumulative exposure to the element is not a reliable index of risk. (ERA citation 11:038961) (NTIS)

HEALTH RISKS

CANCER .... includes carcinogenesis, carcinogens, carcinogenicity, genetics, epidemiology, and multi-media exposure.

Assessment of oxidative metabolism in adults with hepatocellular carcinoma in the Sudan.

HOMEIDA M MA, DANESHMEND TK, ALI EM, YOUSIF-ELKADARU A GM ARBAB B MO
University Medicine, Bristol Royal Infirmary, Bristol BS2 8HW, Avon.
GUT; 27 (4). 1986. 382-385.
BIOSIS COPYRIGHT: BIOL ABS. The hypothesis that an increased rate of oxidative metabolism may be an initiator or promoter of hepatocellular carcinoma was tested in vivo. Elimination of antipyrine (phenazone) was used as an index of the activity of microsomal mixed function oxidative enzymes. Plasma antipyrine kinetics were examined in 10 patients with hepatocellular carcinoma and in 10 normal Sudanese adults. The half life, volume of distribution and clearance of antipyrine in patients were 18.8 U 7.9 hours (mean : SD), 33.8 : 7.7 litres and 23.7 : 10.1 ml/min, respectively; and in normal adults were 20.3 : 8.8 hours, 40.1 : 10.4 litres and 25.7 : 12.0 ml/min, respectively. These differences were not significant. Antipyrine plasma clearance when corrected for weight was similar in the two groups. This study suggests that in a population at risk for hepatocellular carcinoma, the overall activity of mixed function oxidative enzymes is not an important determinant in selectively increasing this risk. (NLM)

**Chemical carcinogens: a review of the science and its associated principles. U.S. Interagency Staff Group on Carcinogens.

Environ Health Perspect; VOL 67, 1986, P201-82 (REF: 756)
In order to articulate a view of chemical carcinogenesis that scientists generally hold in common today and to draw upon this understanding to compose guiding principles that can be used as a bases for the efforts of the regulatory agencies to establish guidelines for assessing carcinogenic risk to meet the specific requirements of the legislative acts they are charged to implement, the Office of Science and Technology Policy, Executive Office, the White House drew on the expertise of a number of regulatory agencies to elucidate present scientific views in critical areas of the major disciplines important to the process of risk assessment. The document is composed of two major sections, Principles and the State-of-the-Science. The latter consists of subsections on the mechanisms of carcinogenesis, short-term and long-term testing, and epidemiology, which are important components in the risk assessment step of hazard

identification. These subsections are followed by one on exposure assessment, and a final section which includes analyses of dose-response (hazard) assessment and risk characterization. The principles are derived from considerations in each of the subsections. Because of present gaps in understanding, the principles contain judgmental (science policy) decisions on major unresolved issues as well as statements of what is generally accepted as fact. These judgments are basically assumptions which are responsible for much of the uncertainty in the process of risk assessment. There was an attempt to clearly distinguish policy and fact. The subsections of the State-of-the-Science portion provide the underlying support to the principles articulated, and to read the "Principles: section without a full appreciation of the State-of-the-Science section is to invite oversimplification and misinterpretation. Finally, suggestions are made for future research efforts which will improve the process of risk assessment.
CAS REGISTRY NUMBERS: 9007-49-2 (NLM)

****CHEMICAL CARCINOGENS; NOTICE OF REVIEW OF THE SCIENCE AND ITS ASSOCIATED PRINCIPLES**
JENNINGS JD
FED. REG. 1984, 49(100) 21594-21661 (NLM)

Comparative potency method for cancer risk assessment: application to the quantitative assessment of the contribution of combustion emissions to lung cancer risk.
Lewtas J
Genetic Bioassay Branch, U.S. Environmental Protection Agency, Research Triangle Park, NC 27711.
Prog Clin Biol Res; VOL 209B, 1986, P529-35
Keywords: Automobile Exhaust *TOXICITY, Carcinogens, Comparative Study, Human, Lung Neoplasms *CHEMICALLY INDUCED/OCCURRENCE, Mutagenicity Tests, Mutagens, Risk (NLM)

DEVELOPMENT OF A COMPARATIVE POTENCY METHOD FOR CANCER RISK ASSESSMENT OF COMPLEX MIXTURES USING SHORT-TERM IN-VIVO AND IN-VITRO BIOASSAYS
LEWTA J
AN INTERNATIONAL SYMPOSIUM ON ADVANCES IN HEALTH RISK ASSESSMENT FOR SYSTEMIC TOXICANTS AND CHEMICAL MIXTURES.
TOXICOL IND HEALTH;
1 (4). 1985 (RECD. 1986). 193-204.
BIOSIS COPYRIGHT: BIOL ABS. RRM HUMAN MOUSE CHO CELL SMOKING AIR POLLUTION MUTAGENESIS AMES TEST SKIN CANCER LUNG CANCER
CAS REGISTRY NUMBERS: 68334-30-5; 65996-77-2; 8007-45-2; 8006-61-9 (NLM)

Mechanisms of DNA damage and repair. Implications for carcinogenesis and risk assessment. Proceedings of a symposium. June 2-7, 1985, Gaithersburg, Maryland.

Basic Life Sci; VOL 38, 1986, P1-578
CODEN: 9K0
KEYWORDS: DNA Repair *, DNA *, Neoplasms *ETIOLOGY, Risk, Support, Non-U.S. Gov't, Support, U.S. Gov't, Non-P.H.S., Support, U.S. Gov't, P.H.S.
CAS REGISTRY NUMBERS: 9007-49-2 (NLM)

RISK ANDREASON RISK ASSESSMENT IN RELATION TO ENVIRONMENTAL MUTAGENS AND CARCINOGENS SATELLITE SYMPOSIUM TO THE FOURTH INTERNATIONAL CONFERENCE ON ENVIRONMENTAL MUTAGENS OSLO NORWAY JUNE 21-22 1985
OFTEDAL, P. AND A. BROGGER (ED.).
PROGRESS IN CLINICAL AND BIOLOGICAL RESEARCH, VOL. 208. RISK AND REASON: RISK ASSESSMENT IN RELATION TO ENVIRONMENTAL MUTAGENS AND CARCINOGENS; SATELLITE SYMPOSIUM TO THE FOURTH INTERNATIONAL CONFERENCE ON ENVIRONMENTAL MUTAGENS, OSLO, NORWAY, JUNE 21-22, 1985. XV+189P. ALAN R. LISS, INC.: NEW YORK, N.Y., USA. ILLUS. ISBN 0-8451-5058-8.; 0 (0). 1986. XV+189P.
BIOSIS COPYRIGHT: BIOL ABS. RRM BOOK MEETING HUMAN RISK RECOGNITION RADIATION GENETICS DECISION MAKING (NLM)

A QUANTITATIVE CANCER RISK ASSESSMENT METHODOLOGY USING SHORT-TERM GENETIC BIOASSAYS THE COMPARATIVE POTENCY METHOD
LEWTAS J OFTEDAL, P. AND A. BROGGER (ED.).
PROGRESS IN CLINICAL AND BIOLOGICAL RESEARCH, VOL. 208. RISK AND REASON: RISK ASSESSMENT IN RELATION TO ENVIRONMENTAL MUTAGENS AND CARCINOGENS; SATELLITE SYMPOSIUM TO THE FOURTH INTERNATIONAL CONFERENCE ON ENVIRONMENTAL MUTAGENS, OSLO, NORWAY, JUNE 21-22, 1985. XV+189P. ALAN R. LISS, INC.: NEW YORK, N.Y., USA. ILLUS. ISBN 0-8451-5058-8.; 0 (0). 1986. 107-120.
BIOSIS COPYRIGHT: BIOL ABS. RRM HUMAN SOOT CARCINOGENESIS (NLM)

****Quantitative Risk Assessment of Ionizing Radiation. Lessons from Chemical Carcinogens.**
Martinelli M, Ricci PF
ENEA, Casaccia (Italy). Direzione Central Studi - Unita Valutazioni Ambientali.
SPONSORING AGENCY: Electric Power Research Inst., Palo Alto, CA.
NTIS/DE86900962, U.S. Sales Only. Portions of this document are illegible in microfiche products., 14p
ENEA-RT/STUDI-84-1, IAEA-SM-266/77
TD3: This paper contains a synthesis of the information required to understand the mechanisms of dose-response commonly found in health risk analysis. The focus is on carcinogenesis from chemicals and ionizing radiations. There are two sections: the stochastic functions of carcinogenesis, and the role of animal study and epidemiology in producing the parameters of these functions. The emphasis is on how long-term experimental results in animals and epidemiological studies are used to determine the

carcinogenic potencies of pollutants at the low doses normally encountered in the environment or in the workplace. The key conclusion is that (although there is much uncertainty that must be resolved) some of the necessary knowledge now exists to make judgements about the usefulness of dose-response models of cancers from environmental pollution, but if and only if the associated uncertainty is included in the results of the analysis. 21 refs. (ERA citation 11:026333) IAEA/WHO symposium on biological effects of low level radiation, Venice, Italy, 11 Apr 1983. (NLM)

****Science and trans-science in radiation risk assessment: child cancer around the nuclear fuel reprocessing plant at Sellafield, U.K.**

Crouch D
Science Policy Research Unit, University of Sussex, Brighton, United Kingdom.
Sci Total Environ; VOL 53, ISS 3, 1986, P201-16

The assessment of health risks to the population from radionuclides in the environment is a complex and as yet incomplete science: biogeochemical mechanisms of environmental transfer and concentration are poorly understood; models of radionuclide metabolism rely largely on inconclusive and contradictory experiments with animals, and the principles by which results may be extrapolated to humans are unknown; uncertainties in the dosimetry of alpha-emitters in children and the foetus are acute; and chronic doubt persists over the magnitude of low-level dose-response for radiation carcinogenesis. To deny uncertainties of this nature is to court public distrust of scientific risk assessment; public confidence in nuclear power technologies might be strengthened through a more open discussion of the technical difficulties involved. These problems are described with reference to the assessment of cancer risks at a large nuclear facility in the north of England. The extent of uncertainties in a recent radiological risk assessment are found to be such that, should scientific concern persist over the exceptional incidence of child cancer in the locality, greater consideration should be given to a reappraisal of the risk calculation. (NLM)

The scientific aspects of carcinogens at work as seen by the Institute of Occupational Health in Oslo

Norseth T
Inst. Occup. Health, Oslo 0033
Med. Lav.; VOL 77, ISS 4, 1986,338-42

CBAC COPYRIGHT: CHEM ABS Review occupational carcinogen;Carcinogens Occupational exposure to, risk assessment for;Hygiene Occupational carcinogen exposure risk assessment in relation to Industrial;Neoplasm Occupational carcinogen exposure risk assessment in relation to (NLM)

**Identification and comparative risk assessment of airborne carcinogens from combustion sources

Lewtas J, Nisioka MG, Peterson BA
Address: Health Effects Res. Lab., Research Triangle Park
Report; ISS EPA/600/D-86/013; Order No. PB86-145786/GAR,, 1986,54 pp.
CBAC COPYRIGHT: CHEM ABS Flue gas carcinogen risk assessment Urban air carcinogen identification;Air analysis Carcinogen identification in;Air pollution By carcinogens from flue gases, risk assessment of;Carcinogens In flue gas-derived air pollutants, identification and risk assessment of;Flue gases Carcinogens in, identification and risk assessment of (NLM)

Opportunity of conservative risk assessment in carcinogenesis

Zapponi GA, Bucchi AR, Lupi C, Rossi L
Lab. Tossicol. Comp. Ecotossicol., Ist. Super. Sanita, Rome
Med. Lav.; VOL 77, ISS 4, 1986,361-9
CBAC COPYRIGHT: CHEM ABS A review with 17 refs. on the assessment of risk of carcinogenesis from low-level, long-term carcinogen exposure in humans. (NLM)

**CANCER RISK ASSESSMENT AND GOVERNMENT REGULATION TO PROTECT PUBLIC HEALTH

SCROGGIN DG
192ND AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, ANAHEIM, CALIF., USA, SEPT. 7-12, 1986.
ABSTR PAP AM CHEM SOC; 192 (0).
1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT HUMAN EPA RADIOACTIVE FALLOUT POLLUTION CONTROL (NLM)

**SOME ISSUES IN THE QUANTITATIVE MODELING PORTION OF CANCER RISK ASSESSMENT.

SIELKEN RL JR
REGUL. TOXICOL. PHARMACOL. 1985, 5(2) 175-181
EIS: Epidemiology Information System SEVERAL QUESTIONS SHOULD BE ASKED IN ORDER TO DETERMINE THE RELEVANCE AND SCIENTIFIC MERIT OF A QUANTITATIVE CANCER RISK ASSESSMENT. TWENTY SUCH QUESTIONS ARE FORMULATED HERE AND BRIEFLY DISCUSSED. THESE QUESTIONS ARE INTENDED TO IDENTIFY IMPORTANT ISSUES AND SERVE AS A CHECKLIST FOR RISK MANAGERS AND DEVELOPERS OF QUANTITATIVE RISK ASSESSMENTS. AMONG THE MANY FACTORS INVOLVED IN THESE QUESTIONS ARE THE CARCINOGENIC RESPONSE, QUANTAL RESPONSE MODELS, TIME TO RESPONSE, COMPETING RISKS, MODEL SHAPES, GOODNESS OF FIT, DOSE SCALE, HIGH-TO-LOW-DOSE EXTRAPOLATION, CONSISTENCY ACROSS DIFFERENT SUBJECTS, ANIMAL-TO-HUMAN EXTRAPOLATION, ROUTE-TO-ROUTE EXTRAPOLATION, EXPOSURE DURATIONS AND PATTERNS, SHORT-TERM TESTS, CONSISTENCY WITH HUMAN EPIDEMIOLOGICAL DATA, HUMAN EXPOSURES, STATISTICAL VARIABILITY, IMPACTS OF ASSUMPTIONS AND POLICY DECISIONS AND VALUE JUDGMENTS, RISK CHARACTERIZATION, UPPER AND LOWER BOUNDS, AND KEEPING PACE WITH SCIENTIFIC ADVANCES.

MATHEMATICAL MODELS OF CANCER AND THEIR USE IN RISK ASSESSMENT.
WHITTEMORE AS
J. ENVIRON. PATHOL. TOXICOL. 1979, 3(1/2) 353-362
Keywords: SWEETENING AGENTS, AGE FACTORS, ANIMAL, ENVIRONMENTAL EXPOSURE, HUMAN,MATHEMATICS,MICE,MODELS, BIOLOGICAL, NEOPLASMS, DIAGNOSIS, NEOPLASMS, EXPERIMENTAL RISK (NLM)

****CARCINOGENIC RISK ASSESSMENT**
CORNFIELD J
SCIENCE 1977, 198() 693-699
EIS: Epidemiology Information System
Keywords: FOOD PRESERVATION,HUMAN,ANIMAL,ANALYSIS,FOOD, REVIEW, RISK, METHODS, PROBABILITY, CARCINOGENS, KINETICS, MODELS, THEORETICAL (NLM)

CARCINOGENIC RISK ASSESSMENT: ETHYLENE DIBROMIDE
RAMSEY JC, PARK CN, OTT MG, GEHRING PJ
TOXICOL. APPL. PHARMACOL. 1979, 47(2) 411-414
Keywords: ETHYLENE DIBROMIDE,RISK, NEOPLASMS, MODELS, MATHEMATICAL, BIOLOGICAL ASSAY, OCCUPATIONAL DISEASES, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
CAS Registry Numbers: 106-93-4

FUNDAMENTAL CARCINOGENIC PROCESSES AND THEIR IMPLICATIONS FOR LOW DOSE RISK ASSESSMENT
CRUMP KS, HOEL DG, LANGLEY CH, PETO R
CANCER RES. 1976, 36() 2973-2979
Keywords: LIVER NEOPLASMS, ANALYSIS, RISK, CARCINOGENS, OCCURRENCE, MODELS, BIOLOGICAL, MATHEMATICS, KINETICS (NLM)

CHEMICAL CARCINOGENS AND HUMAN RISK ASSESSMENT.
CAMPBELL TC
FED. PROC. 1980, 39(8) 2467-2484
Keywords: RATS, CARCINOGENS, CHEMISTRY, COCARCINOGENESIS, DRUG INTERACTIONS, DRUGSCREENING,METHODS,FOOD CONTAMINATION,HUMAN,LEGISLATION,DRUG,MODELS, THEORETICAL, MUTATION, NEOPLASMS, CHEMICALLY INDUCED, PROBABILITY, REVIEW, RISK, SALMONELLA TYPHIMURIUM, DRUG EFFECTS, WATER POLLUTANTS, CHEMICAL, ADVERSE EFFECTS (NLM)

****AIR POLLUTION AND CANCER: RISK ASSESSMENT METHODOLOGY AND EPIDEMIOLOGICAL EVIDENCE**
CEDERLOF R, DOLL R, FOWLER B, FRIBERG L, NELSON N, VOUK V,
ENVIRON. HEALTH PERSPECT. 1978, 22() 1-12
Keywords: MODELS, THEORETICAL, HUMAN, CHEMICALLY INDUCED, RISK, AIR POLLUTANTS, AIR POLLUTION, CARCINOGENS,

DOSE-RESPONSE RELATIONSHIP, DRUG, LUNG NEOPLASMS,
URBAN POPULATION (NLM)

QUANTITATIVE RISK ASSESSMENT: REPORT OF THE SUBCOMMITTEE ON ENVIRONMENTAL CARCINOGENESIS, NATIONAL CANCER ADVISORY BOARD
SAMUELS SW, ADAMSON RH
J. NATL. CANCER INST. 1985, 74(4) 945-951
Keywords: PULMONARY FIBROSIS, HUMAN, ANIMAL, EPIDEMIOLOGIC METHODS, METHODS, RISK, TOXICITY, CARCINOGENS, BIOLOGICAL ASSAY, DATA COLLECTION, MODELS, MATHEMATICAL, MODELS, THEORETICAL, UNITED STATES NATIONAL INSTITUTES OF HEALTH (NLM)

OBSERVABLE TUMOURS, RISK ASSESSMENT AND EXPERIMENTAL DESIGN.
CARLBORG FW
FOOD CHEM. TOXICOL. 1984, 22(1) 69-73
Keywords: PETROLEUM, ANIMAL, CARCINOGENS, ENVIRONMENTAL, TOXICITY, DOSE-RESPONSE RELATIONSHIP, DRUG, FEMALE, HUMAN, MALE, MATHEMATICS, MICE, MODELS, BIOLOGICAL, OCCUPATIONAL DISEASES, CHEMICALLY INDUCED, RISK, SKIN ABSORPTION, SKIN NEOPLASMS
CAS REGISTRY NUMBERS: 8002-05-9 (NLM)

APPLICATION OF RISK ASSESSMENT TO FOOD SAFETY DECISION MAKING.
RODRICKS J, TAYLOR MR
REGUL. TOXICOL. PHARMACOL. 1983, 3(3) 275-307
Keywords: ANTIFUNGAL AGENTS, ANIMAL, CARCINOGENS, ENVIRONMENTAL, ADVERSE EFFECTS, DOSE-RESPONSE RELATIONSHIP, DRUG, FOOD, STANDARDS, HUMAN, LEGISLATION, FOOD, RISK, SPECIES SPECIFICITY, UNITED STATES (NLM)

****CARCINOGEN RISK ASSESSMENT: LETTER.**
WILLIAMS GM, WEISBURGER JH
SCIENCE 1983, 221(4605) 6
Keywords: SOYBEANS, ANIMAL, CARCINOGENS, PHARMACODYNAMICS, HUMAN, RISK (NLM)

RISK ASSESSMENT: SUBJECT LISTING
EPIDEMIOLOGY AND CLINICAL TOXICOLOGY UNIT, FOOD AND DRUG ADMINISTRATION
SCIENTIFIC LITERATURE COVERAGE LISTING, UNPUBLISHED 1982, 1 P.
Keywords: OCCURRENCE, BIBLIOGRAPHY, DOCUMENTATION, INDEXES, RISK (NLM)

****Derivation of Cumulated Age Adjusted Tumor Rates for Use in Low Dose Extrapolation**
(Final rept.)
Gaylor, D. W. ; Kodell, R. L. ; Chen, J. J.
National Center for Toxicological Research, Jefferson, AR.

Report No.: NCTR-6222; FDA/NCTR-86/68
Nov 84 29p
PB86-150794/XAB

If crude experimental proportions of animals with tumors from chronic bioassays for carcinogenicity are used for low-dose extrapolation in a risk analysis, different dose-specific patterns of mortality due to competing risks can bias the results. In order to adjust tumor rates for differential mortality across dose groups, Farmer, Kodell and Gaylor (1982) recommended using nonparametric estimates of probability distributions of times to onset of tumors, with competing causes of death removed, when performing a risk analysis. The paper extends the approach of Farmer, et al (1982) by proposing a method for adjusting tumor rates to reflect lifetime or near-lifetime tumor incidences that would be obtained if all dose groups experienced the control mortality rate from causes other the tumor of interest. Thus natural mortality due to competing risks is explicitly included, rather than removed. The proposed standardized tumor rates are calculated as a summation of adjusted age-specific probabilities of dying with a tumor during the course of an animal bioassay for carcinogenicity Xplus the probability of being alive with a tumor at the terminal sacrifice. In a dose-response bioassay involving two or more treatment groups, comparable standardized tumor rates can be estimated only through the time of the last death in the shortest surviving dose group, which generally will be the time of the terminal sacrifice. (NTIS)

A STANDARDIZED BENCHMARK APPROACH TO THE USE OF CANCER EPIDEMIOLOGY DATA FOR RISK ASSESSMENT
SMITH AH, SHARP DS
AN INTERNATIONAL SYMPOSIUM ON ADVANCES IN HEALTH RISK ASSESSMENT FOR SYSTEMIC TOXICANTS AND CHEMICAL MIXTURES.
TOXICOL IND HEALTH;
1 (4). 1985 (RECD. 1986). 205-212.
BIOSIS COPYRIGHT: BIOL ABS. RRM HUMAN WORKER BENZENE RADON DAUGHTER LEUKEMIA LUNG CANCER
CAS REGISTRY NUMBERS: 10043-92-2; 71-43-2

STUDIES ON ENVIRONMENTAL CHEMICAL CARCINOGENESIS IN JAPAN
SUGIMURA T
SCIENCE (WASH D C); 233 (4761). 1986. 312-318.
BIOSIS COPYRIGHT: BIOL ABS. RRM REVIEW VIRAL CARCINOGENESIS 4 NITROQUINOLINE 1-OXIDE FOOD ADDITIVE AF-2 COOKED FOODS REGULATORY ETHICS RISK ANALYSIS PREVENTION HISTORY GOVERNMENT
CAS REGISTRY NUMBERS: 3688-53-7; 56-57-5

*86-064458
****USING CANCER RISK ASSESSMENTS TO DETERMINE 'HOW CLEAN IS CLEAN',**
FERLAND ROGER K.
TWITTY SIEVWRIGHT & MILLS, AZ,
AMERICAN WATER RESOURCES ASSN GROUNDWATER CONTAM & RECLAMATN

SYM, TUCSON, AUG 14-15, 85, P73(7)
CONF PAPER STANDARDS FOR DRINKING WATER AS WELL AS FOR AIR QUALITY AND GROUNDWATER RECLAMATION ARE INCREASINGLY BASED ON CANCER RISK ASSESSMENT CALCULATIONS. THE TECHNIQUES USED IN SUCH ASSESSMENTS AND THE ACCURACY AND ISSUES RAISED BY THOSE TECHNIQUES ARE CONSIDERED. PROBLEMS ENCOUNTERED IN DETERMINING THE RISK OF CANCER TO HUMANS POSED BY VARIOUS SUBSTANCES ON THE BASIS OF ANIMAL TESTS ARE ADDRESSED; ISSUES RAISED BY CONVERTING ANIMAL TEST RESULTS TO HUMAN RISK ASSESSMENTS ARE UNDERSCORED. SOME IMPROVEMENTS IN THE ASSESSMENT PROCESS AND THE MANNER IN WHICH THAT PROCESS IS USED IN ENVIRONMENTAL STANDARD-SETTING ARE SUGGESTED. (ENVL)

GENOTOXICITY AND REPRODUCTIVE EFFECTS

GENOTOXICITY AND REPRODUCTIVE EFFECTS .... includes development and reproductive effects; embryo and fetal effects, fertility, exposure during pregnancy, teratogenicity, mutagenesis and mutagenicity; genetics and carcinogenesis; and neoplasia.

Assessing the risks of Rn exposure: the influence of cigarette smoking.

Ginevan ME, Mills WA
Health Phys; VOL 51, ISS 2, 1986, P163-74
CODEN: G2H

The principal hazard associated with exposure to Rn progeny is lung cancer. However, most lung cancer is caused by smoking, which raises a dual problem of deriving Rn-progeny cancer risk estimates from miner populations who, in large part, are smokers and applying these estimates to the general population whose lung cancer risk, in large part, is determined by smoking habits. We examine current risk estimates for Rn-progeny-induced lung cancer using a cohort life table methodology. Estimates of lifetime probability of dying of lung cancer, average loss in life expectancy due to premature lung cancer death, and loss in life expectancy per premature lung cancer death are calculated for the general population for 1969 and 1978, nonsmokers, and smokers. These calculations demonstrate that such risk estimates are affected by smoking, and by trends in smoking habits, in several ways. Major smoking-related factors in this interaction are the proportion of smokers in the mining population used to derive lung cancer risk estimates, the proportion of smokers in the "general: population, and the assumed interaction (additive or multiplicative) between lung cancer risk, Rn-progeny exposure, and smoking history. At this time the data are not sufficient to recommend one particular modeling approach. However, our evaluation demonstrates that broad statements about Rn-progeny lung cancer risk such as "x cancers/10(6) person working level month,: while informative, are incomplete without further specification. Any risk assessment must clearly state the population assumed to be at risk and the risk model assumed to be operating. Finally, the caveats appropriate to these assumptions should also be enunciated.

CAS REGISTRY NUMBERS: 10043-92-2; 7439-92-1; 7440-08-6; 7440-61-1; 7440-69-9 (NLM)

CHROMOSOME ABERRATIONS INDUCED IN HUMAN LYMPHOCYTES BY LOW DOSES OF COBALT-60 GAMMA-RAYS DELIVERED AT DIFFERENT DOSE RATES

FABRY L
19TH ANNUAL MEETING OF THE EUROPEAN SOCIETY FOR RADIATION BIOLOGY, PRAGUE, CZECHOSLOVAKIA, AUG. 26-30, 1985. INT J RADIAT BIOL RELAT STUD PHYS CHEM MED; 49 (4). 1986. 720.

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BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT RADIATION EXPOSURE GENETIC RISK ASSESSMENT
CAS REGISTRY NUMBERS: 10198-40-0 (NLM)

The estimation of risks from the induction of recessive mutations after exposure to ionising radiation.
Searle AG, Edwards JH
J Med Genet; VOL 23, ISS 3, 1986, P220-6
Since recent assessments of genetic risks from radiation have concentrated on harmful dominant effects, a quantitative assessment of risks from recessives is needed. Presumably, harmful recessives can arise at all loci coding for essential proteins (perhaps 10 000), but mutation to dominant alleles is likely to be a property of relatively few loci. While many recessives doubtless remain to be discovered, those known at present tend to have earlier and more severe effects than dominants. Induced recessive mutations can cause harm by partnership with a defective allele already established in the population; partnership with another recessive mutation induced at the same locus; the formation of homozygous descendants, that is, identity by descent; and heterozygous effects. Calculations based on a combination of data from observations on human populations and from mouse experiments suggest that an extra genetically significant dose of 1 cGy (centiGray, equivalent to 1 rad) X or gamma irradiation received by each parent in a stable population with a million liveborn offspring would induce up to 1200 extra recessive mutations. From partnership effects, about one extra case of recessive disease would be expected in the following 10 generations. Homozygosity resulting from identity by descent could not normally occur until the fourth generation after exposure but, on certain assumptions, about ten extra cases of recessive disease would be expected from this cause by the tenth generation. In the same period, about 250 recessive alleles would be eliminated in heterozygotes (that is, Muller's 'genetic deaths') given 2.5% heterozygous disadvantage. These deleterious heterozygous effects should not be combined with those of dominants, as has been done in some previous risk estimates.(ABSTRACT TRUNCATED AT 250 WORDS) (NLM)

A critical review of multigeneration studies.
CHRISTIAN MS
Argus Res. Lab., Inc., 905 Sheehy Dr., Horsham, PA 19044.
J AM COLL TOXICOL; 5 (2). 1986. 161-180.
BIOSIS COPYRIGHT: BIOL ABS. The Chemical Manufacturers Association has an ongoing project to summarize information required to evaluate various approaches to assessment of reproductive hazards in the workplace. The information presented in this manuscript was generated as part of that project and included (1) a search of the published literature to identify, among other items (a) the procedures used in animal toxicological reproduction testing and (b) whether the database identified could be used for determining the number of generations and litters per generation to be required to provide reproductive

risk assessment data for use in a multigeneration evaluation; and (2) a review and tabulation of information on scientific rationale, regulatory history and US and international regulatory guidelines for conduct of animal toxicological reproduction testing procedures. The search and review were inclusive only to their limits, and reports may have been omitted from consideration because they were unobtainable or unidentified. Of 817 publications identified as relevant, it was possible to obtain at least 73 rat or mouse multigeneration studies that met the minimal criteria of at least 4 animals per dosage group and a premating dosage period of at least 10 days (female animals) or 60 days (male animals). Of these 73 studies, 35 were "negative" (no effect reported) and 38 were "positive" (some effect reported). Twenty of the positive studies had effects that were more severe or first detected in the sec or subsequent generations than in the first generation. These 20 studies were selected for use in identifying appropriate testing procedures because each (1) reported one or more primary adult or litter reproductive effects, (2) had adequate controls, (3) had more than one dosage group, and (4) used the rat as the test species. The chemicals tested in these 20 studies were classified as insecticides (4 studies), herbicides (3 studies), food/food additives (3 studies), fungicides (2 studies), drugs (2 studies), a metal, an "other agent," a hydrocarbon, a detergent, a plasticizer, and a dioxin (1 study each). These 20 studies were critically reviewed to identify adult and litter primary reproductive effects (present in the absence of adult toxicity) and adult toxic effects. In general, the quality of the published data was poor. Some measurement of adult toxicity was reported in 18 of the 20 studies; only 13 of these 18 studies reported an effect. Each of the 20 studies reported some evaluation of litter parameters; each had some effect. Only 10 of the 20 studies reported an adult primary reproductive effect (9 in the first generation and 1 in the second generation). The affected second-generation adults came from a population of compromised first-generation pups (primary litter reproductive effects: decreased viability and litter weight). In contrast, all 20 studies had a primary litter reproductive effect present in the first generation. Observations for control litters were erratic from litter to litter, although findings from the first litter from generation to generation were essentially reproducible. Three of the 9 studies with "increasing" primary reproductive effects were of agents with bioaccumulative properties. On the basis of this limited sample size (20 studies), it appears that if the objective the study is to identify the lowest dosage producing a primary reproductive effect, litter parameters are those that are most sensitive, and one generation appears to be sufficient for evaluation. If there is evidence of bioaccumulat (NLM)

INTERNATIONAL COMMISSION FOR PROTECTION AGAINST ENVIRONMENTAL MUTAGENS PERSPECTIVES ON THE SCIENTIFIC BASIS OF RISK ASSESSMENT IN GENETIC TOXICOLOGY
BRIDGES BA
OFTEDAL, P. AND A. BROGGER (ED.).
PROGRESS IN CLINICAL AND BIOLOGICAL RESEARCH, VOL. 208.
RISK AND REASON: RISK ASSESSMENT
IN RELATION TO ENVIRONMENTAL MUTAGENS AND CARCINOGENS; SATELLITE SYMPOSIUM TO THE FOURTH INTERNATIONAL CONFERENCE ON ENVIRONMENTAL MUTAGENS, OSLO, NORWAY, JUNE 21-22, 1985. XV+189P. ALAN R. LISS, INC.: NEW YORK, N.Y., USA. ILLUS. ISBN 0-8451-5058-8.; 0 (0). 1986. 175-182.
CODEN: PCBRD
BIOSIS COPYRIGHT: BIOL ABS. RRM HUMAN GERM CELL GENETIC HYPERSENSITIVITY CARCINOGENESIS EPIDEMIOLOGY (NLM)

Interpretation of genotoxicity data in assessing the risks of genetic diseases.
Denniston C
Basic Life Sci; VOL 38, 1986, P519-27
Two aspects of genetic risk assessment have been discussed briefly. Some new results concerning the logical development of mutagenic screening programs have been reviewed. In addition, a brief introduction to quantitative risk estimation has been given. (NLM)

Intragenomic heterogeneity in DNA damage processing: potential implications for risk assessment.
Hanawalt PC
Basic Life Sci; VOL 38, 1986, P489-98
KEYWORDS: Carcinogens *, Cell Line, Cell Transformation, Neoplastic * DNA Repair *, DNA GENETICS, Genes *, Human, Mutagens *, Mutation*, Risk, Support, Non-U.S. Gov't, Support, U.S. Gov't, Non-P.H.S., Support, U.S. Gov't, P.H.S., Xeroderma Pigmentosum
CAS REGISTRY NUMBER: 9007-49-2 (NLM)

Issues in risk assessment in male reproductive toxicology
Zenick H, Clegg ED
Off. Health Environ. Effects, EPA, Washington
J. Am. Coll. Toxicol.; VOL 5, ISS 4, 1986,249-59
CBAC COPYRIGHT: CHEM ABS A review with 12 refs. of hazard identification in male reproductive risk assessment and dose-response relationship in the risk assessment. (NLM)

Neonatal effects of transplacental exposure to PCBs and DDE.
Rogan WJ, Gladen BC, McKinney JD, Carreras N, Hardy P, Thullen J, Tinglestad J, Tully M
J Pediatr; VOL 109, ISS 2, 1986, P335-41
Neonatal effects of transplacental exposure to polychlorinated biphenyls (PCBs) and dichlorodiphenyl dichloroethene (DDE) were

examined in a study of 912 infants. Birth weight, head circumference, and neonatal jaundice showed no relationship to PCBs or DDE. We also administered the Brazelton Neonatal Behavioral Assessment Scales, which are psychologic and neurologic tests designed for use in newborn infants. The results of these tests showed that higher PCB levels were associated with hypotonicity and hyporeflexia and that higher DDE levels were associated with hyporeflexia.
CAS REGISTRY NUMBERS: 72-55-9 (NLM)

Reproductive and developmental toxicity risk assessment
Smith JM
Rohm and Haas Co., Philadelphia
ACS Symp. Ser.; VOL 315, ISS Eval. Pestic. Ground Water, 1986,414-22
CBAC COPYRIGHT: CHEM ABS A review with 13 refs. on reprodn. and developmental toxicity assessment for environment-polluting pesticides. (NLM)

****Reproductive Effects Assessment Group's Review of the Mutagenicity of Vinylidene Chloride.**
Jacobson-Kram D
Environmental Protection Agency, Washington, DC. Office of Health and Environmental Assessment.
NTIS/PB86-204666, 11p
EPA/600/J-86/065
TD3: A large number of studies indicate that vinylidene chloride is mutagenic to bacteria and that this activity is largely dependent on microsomal activation. Vinylidene chloride was reported to produce positive results for gene reversion and conversion in yeast, which was also dependent on metabolic activation, and was positive in tradescantia. In mammalian systems vinylidene chloride failed to induce gene mutations in V79 cells at two separate loci, failed to induce chromosomal aberrations in mouse bone marrow in vivo, and failed to induce dominant lethals in either mice or rats. Vinylidene chloride was found to bind to DNA of mice exposed through inhalation and may have caused unscheduled DNA synthesis in the kidneys of similarly exposed mice. Analysis of the data relating to the potential of vinylidene chloride to behave as a human germ-cell mutagen indicates that, based on the criteria established in EPA's Proposed Guidelines for Mutagenicity Risk Assessment, the evidence at the present time is classified as limited. Journal article, Pub. in Environmental Mutagenesis 8, p161-169 Jan 86. (NLM)

SEQUENTIAL METHODS IN GENETIC RISK ASSESSMENT.
HOEL DG
GENETICS 1979, 92(SUPPL. 1, PT. 1) S195-S198
Keywords: SUBCELLULAR FRACTIONS, MUTATION, PROBABILITY, RISK, STATISTICS (NLM)

GUIDANCE FOR THE EVALUATION, RISK ASSESSMENT AND CONTROL OF CHEMICAL EMBRYO-FETOTOXINS.
KARRH BW, CARMODY TW, CLYNE RM, GOULD KG, PORTELA-CUBRIA G, SMITH JM, FREIFELD M
J. OCCUP. MED. 1981, 23(6) 397-399
Keywords: REVIEW,ANIMAL,EMBRYO, DRUG EFFECTS, FEMALE, FETAL DISEASES, CHEMICALLY INDUCED, HUMAN, JURISPRUDENCE, OCCUPATIONAL DISEASES, PREVENTION AND CONTROL, PREGNANCY, RISK, TERATOGENS, ANALYSIS, UNITED STATES
(NLM)

****DIFFERENTIATION OF GENETIC VERSUS EPIGENETIC MECHANISMS OF TOXICITY AND ITS APPLICATION TO RISK ASSESSMENT.**
STOTT WT, WATANABE PG
DRUG METAB. REV. 1982, 13(5) 853-873
Keywords: P-DIOXANE, TETRACHLOROETHYLENE, HEXACHLOROBUTADIENE, DNA, ANIMAL, BIOLOGICAL ASSAY, BUTADIENES, CARCINOGENS, COMPARATIVE STUDY, DIOXANES, DOSE-RESPONSE RELATIONSHIP, DRUG, DNA REPAIR, METABOLISM, KIDNEY NEOPLASMS, CHEMICALLY INDUCED, KINETICS, LIVER NEOPLASMS, MODELS, BIOLOGICAL, MUTAGENICITY TESTS, MUTATION, NEOPLASMS, REVIEW, RISK
CAS REGISTRY NUMBERS: 123-91-1, 127-18-4, 87-68-3, 9007-49-2 (NLM)

****Aneuploidy and Health Risk Assessment: Current Status and Future Directions**
(Journal article)
Dellarco, V. L. ; Mavournin, K. H. ; Tice, R. R.
Environmental Protection Agency, Washington, DC. Reproductive Effects Assessment Group.
Sponsor: Oak Ridge National Lab., TN.; ; Brookhaven National Lab., Upton, NY.
Report No.: EPA/600/J-85/316
c1985 22p
PB86-164845/XAB
Pub. in Environmental Mutagenesis 7, p405-424 May 85.
Prepared in cooperation with Oak Ridge National Lab., TN., and Brookhaven National Lab., Upton, NY.

The U.S. Environmental Protection Agency sponsored a workshop to discuss (1) the contribution of aneuploidy to human disease and disability, (2) the development of tests for detecting chemicals that induce aneuploidy and the relevance of these tests to human risk, and (3) the current understanding of mechanisms by which aneuploidy arises. The summary is based on the presentations given at the workshop. It is hoped that the summary will stimulate thinking in the vitally important area of risk assessment and contribute to the establishment of priorities for basic research, development of new test methods, and validation of existing test approaches. Such research is needed to enhance the scientific basis of risk assessment for aneuploidy-producing chemicals. (NTIS)

****Reproductive Health Hazards in the Workplace.
Volume 1. Selected Ethical Issues in the Management of
Reproductive Health Hazards in the Workplace**
Office of Technology Assessment, Washington, DC.
Jan 86 117p
PB86-172152/XAB
See also Volume 2, PB86-172160.
Also available in set of 3 reports PC E99, PB86-172145.
Volume I: Selected ethical issues in the management of reproductive health hazards in the workplace; The moral issues; Ethical issues in risk assessment and the 'right to know'; The policy options before Congress; Ethical issues in discrimination and job termination; Ethical analysis of legislative option: Compensation for reproductive damage resulting from the workplace; Ethics, risk assessment and reproductive hazards. (NTIS)

Study designs appropriate for the workplace
Hogue CJ R
Div. Reprod. Health, Cent. Health Promot. Educ., Atlanta
Occup. Med.: State of the Art Rev.; VOL 1, ISS 3, 1986,457-72
CBAC COPYRIGHT: CHEM ABS Reproductive hazard assessment workplace review;Health hazard Reproductive, assessment of, research design for Occupational;Reproduction Occupational health hazard effect on, assessment of, research design for (NLM)

TERATOGENICITY STUDIES IN THE RISK ASSESSMENT
SULLIVAN FM
INTERNATIONAL SYMPOSIUM ON PHARMACOKINETICS IN TERATOGENESIS, WEST BERLIN, WEST GERMANY, SEPT. 13-15, 1985. TERATOLOGY; 33 (2). 1986. 48A.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT RODENT CAFFEINE TERATOGEN LOW BIRTHWEIGHT RETARDED OSSIFICATION PHARMACOKINETICS CARDIOVASCULAR ACTION ENDOCRINE ACTION
CAS REGISTRY NUMBERS: 58-08-2 (NLM)

****TERATOGENICITY STUDIES IN THE RISK ASSESSMENT FOR CAFFEINE**
SULLIVAN FM
TERATOLOGY; 33(2):48A,1986
Keywords: GROWTH, MUSCULOSKELETAL SYSTEM, CAFFEINE
CAS REGISTRY NUMBERS: 58-08-2 (NLM)

SYMPOSIUM: RISK ASSESSMENT FOR DEVELOPMENTAL TOXICITY
SCHARDEIN JL
FUNDAM APPL TOXICOL; 5:607-608, 1985 (NLM)

CHEMICAL SPECIFIC RISK ASSESSMENT

Neoplasm risk in men occupationally exposed to asbestos dust
Szeszenia-Dabrowska N, Wilczy:nska U, Szymczak W
Z Zak:adu Epidemiologii i Statystyki Instytutu Medycyny Pracy w Lodzi.
Med Pr; VOL 37, ISS 3, 1986, P129-38
Language: Polish
To evaluate the magnitude of cancer risk in those occupationally exposed to asbestos dust, a historically prospective cohort has been investigated. The observation covered 2403 men employed for at least 3 months, within 1945-1973, in a factory producing various asbestos products--including chrysotile. The cohort availability on 31 Dec. 1981 was 91.3%. The risk analysis was based on the standardized mortality ratio (SMR) calculated by the man-years method. The reference group was composed of general men population in Poland. Totally, in the test cohort 401 deaths were certified, in this 73 due to malignant tumours and 31 due to the respiratory system cancer. The total standardized mortality ratio (SMR) came to 85, for malignant tumours, SMR = 104.8 for the respiratory system cancer SMR = 144.7, lung cancer-139.5%. Those values were not statistically significant. In the cohort of those employed during 1945-1955, selected due to a very high concentration of asbestos dust at this time and long observation time from the first contact with asbestos dust, the total SMR was 90.7, the one for malignant tumours-136.2 (p less than 0.05). In this cohort 21 deaths for the respiratory system cancer were observed, the total SMR = 191.1 (p less than 0.01), in this 18 for the lung cancer, SMR = 187.1 (p less than 0.05). The other cancer groups did not exhibit any statistically significant standardized mortality rate. The analysis points to a considerable lung cancer risk in those occupationally exposed to asbestos dust at the time of high non-controlled asbestos dust concentrations.
CAS REGISTRY NUMBERS: 1332-21-4

****Monograph on Human Exposure to Chemicals in the Workplace: Asphalt**
(Final rept.)
Santodonato, J.
Syracuse Research Corp., NY. Center for Chemical Hazard Assessment.
Sponsor: National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Report No.: SRC-TR-85-188
Jul 85 44p
PB86-155082/XAB
Portions of this document are not fully legible. Sponsored by National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Contract No.: N01-CP-26002-03
The report presents a summary and evaluation of information

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relevant to an occupational hazard assessment of the chemical. Pertinent toxicologic data were located through on-line and manual literature searches for the period extending back approximately ten years from 1984. No attempt was made to exhaustively review the toxicologic literature; where appropriate the reader is referred to comprehensive reviews on this topic. Special attention in this report was focused on summarizing the available information regarding the carcinogenic potential of the chemical.
(NTIS)

****The assessment of major hazards: the lethal toxicity of bromine**
Withers RM J, Lees FP
Dep. Chem. Eng., Loughborough Univ. Technol., Loughborough/Leicestershire
J. Hazard. Mater.; VOL 13, ISS 3, 1986,279-99
CBAC COPYRIGHT: CHEM ABS Lethal toxicity bromine assessment model Bromine exposure hazard assessment model Health hazard bromine exposure model;Air pollution By bromine, exposure to, lethal toxicity of, model for;Health hazard Of bromine exposure, assessment of, lethal toxicity model for;Process simulation Of bromine lethal toxicity, for exposure hazard assessment Physicochemical;Toxicity Lethal, of bromine, to humans, model for
CAS REGISTRY NUMBERS: 7726-95-6 (NLM)

****Monograph on Human Exposure to Chemicals in the Workplace: Cadmium**
(Final rept.)
Santodonato, J.
Syracuse Research Corp., NY. Center for Chemical Hazard Assessment.
Sponsor: National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Report No.: SRC-TR-84-665
Jul 85 48p
PB86-155140/XAB
Sponsored by National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Contract No.: N01-CP-26002-03
The report presents a summary and evaluation of information relevant to an occupational hazard assessment of the chemical. Pertinent toxicologic data were located through on-line and manual literature searches for the period extending back approximately ten years from 1984. No attempt was made to exhaustively review the toxicologic literature; where appropriate the reader is referred to comprehensive reviews on the topic. Special attention in the report was focused on summarizing the available information regarding the carcinogenic potential of the chemical.
CAS REGISTRY NYMBERS: 7440-43-9 (NTIS)

****CARBARYL A TOXICOLOGICAL REVIEW AND RISK ANALYSIS**
CRANMER MF
NEUROTOXICOLOGY (LITTLE ROCK); 7 (1). 1986. 247-328.

BIOSIS COPYRIGHT: BIOL ABS. RRM HUMAN ANIMAL SEVIN NEUROTOXICITY TERATOGEN MUTAGEN CARCINOGEN IMMUNOTOXICITY INSECTICIDE
CAS REGISTRY NUMBERS: 63-25-2 (NLM)

****Monograph on Human Exposure to Chemicals in the Workplace: Carbon Black**
(Final rept.)
Santodonato, J.
Syracuse Research Corp., NY. Center for Chemical Hazard Assessment.
Sponsor: National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Report No.: SRC-TR-84-1015
Jul 85 44p
PB86-152048/XAB
Sponsored by National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Contract No.: N01-CP-26002-03

The report presents a summary and evaluation of information relevant to an occupational hazard assessment of the chemical. Pertinent toxicologic data were located through on-line and manual literature searches for the period extending back approximately ten years from 1984. No attempt was made to exhaustively review the toxicologic literature; where appropriate the reader is referred to comprehensive reviews on this topic. Special attention in this report was focused on summarizing the available information regarding the carcinogenic potential of the chemical.
CAS REGISTRY NUMBERS: 1333-86-4 (NTIS)

****Health effects assessment for 1,1-dichloroethylene**
United States Environmental Protection Agency
Environ. Criter. Assess. Off., Cincinnati
Report; ISS EPA/540/1-86/051;
Order No. PB86-134624/GAR,, 1984,45pp.
CBAC COPYRIGHT: CHEM ABS Chloroethylene exposure health hazard review;Health hazard Of dichloroethylene exposure, assessment of;Hygiene Dichloroethylene exposure health hazard assessment in relation to
CAS REGISTRY NUMBERS: 75-35-4 (NLM)

****CRITICAL ASSUMPTIONS IN RISK ASSESSMENT OF SOIL CONTAMINATED WITH 2 3 7 8 TETRACHLORODIBENZO-P-DIOXIN DIOXIN**
PAUSTENBACH DJ, SHU HP, MURRAY FJ
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC ; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT CHILD FISH FLY ASH USA EUROPE DERMAL ORAL SOIL POLLUTION AIR POLLUTION WATER POLLUTION
CAS REGISTRY NUMBERS: 1746-01-6; 828-00-2

****UNCERTAINTIES IN DIOXIN RISK ASSESSMENT**
HOUK VN
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT HUMAN ANIMAL MISSOURI USA CARCINOGEN SOIL POLLUTION
CAS REGISTRY NUMBERS: 828-00-2 (NLM)

****HEALTH HAZARD ASSESSMENT FOR CHLORINATED DIOXINS AND DIBENZOFURANS OTHER THAN 2 3 7 8 TETRACHLORODIBENZO-P-DIOXIN**
BELLIN JS, BARNES DG
AN INTERNATIONAL SYMPOSIUM ON ADVANCES IN HEALTH RISK ASSESSMENT FOR SYSTEMIC TOXICANTS AND CHEMICAL MIXTURES.
TOXICOL IND HEALTH; 1 (4). 1985 (RECD. 1986). 235-248.
BIOSIS COPYRIGHT: BIOL ABS. RRM HUMAN FLY ASH EPA SOIL POLLUTION AIR POLLUTION
CAS REGISTRY NUMBERS: 72918-21-9; 70648-26-9; 60851-34-5; 57653-85-7; 57117-44-9; 57117-41-6; 57117-31-4; 51207-31-9; 40321-76-4; 39227-28-6; 19408-74-3; 1746-01-6 (NLM)

THE DEVELOPMENT AND RISK ASSESSMENT OF A GENETICALLY ENGINEERED MICROBIAL INSECTICIDE
KAUFMAN RJ
SYMPOSIUM ON MOLECULAR ENTOMOLOGY HELD AT THE 15TH ANNUAL MEETING OF THE UCLA (UNIVERSITY OF CALIFORNIA-LOS ANGELES) SYMPOSIA ON MOLECULAR AND CELLULAR BIOLOGY, MAR. 20-APR. 6, 1986.
J CELL BIOCHEM SUPPL; 0 (10 PART C). 1986. 94.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT
BACILLUS-THURINGIENSIS-KURSTAKI PSEUDOMONAS-FLUORESCENS CORN DELTA ENDOTOXIN GENETIC ENGINEERING ENVIRONMENTAL HAZARD MICROBIAL CONTROL
CAS REGISTRY NUMBERS: 11034-88-1 (NLM)

FIELD CONFIRMATION OF A LABORATORY-DERIVED HAZARD ASSESSMENT OF THE ACUTE TOXICITY OF FENTHION TO PINK SHRIMP PENAEUS-DUORARUM
BORTHWICK PW, CLARK JR, MONTGOMERY RM, PATRICK J M JR, LORES EM
BAHNER, R. C. AND D. J. HANSEN (ED.). ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS) SPECIAL TECHNICAL PUBLICATION, 891. AQUATIC TOXICOLOGY AND HAZARD ASSESSMENT; EIGHT SYMPOSIUM, FORT MITCHELL, KY., USA, APR. 15-17, 1984. X+480P. AMERICAN SOCIETY FOR TESTING AND MATERIALS: PHILADELPHIA, PA., USA. ILLUS. ISBN 0-8031-0437-5.; 0 (0). 1985 (RECD. 1986). 177-190.
BIOSIS COPYRIGHT: BIOL ABS. RRM LC-50 INSECTICIDE
CAS REGISTRY NUMBERS: 55-38-9 (NLM)

****Health effects assessment for glycol ethers**
United States Environmental Protection Agency
Environ. Criter. Assess. Off., Cincinnati
Report; ISS EPA/540/1-86/052;

Order No. PB86-134632/GAR,, 1984,90pp.
CBAC COPYRIGHT: CHEM ABS Glycol ether health hazard review;Health hazard Of glycol ether exposure, assessment of;Hygiene Glycol ether exposure health hazard assessment in relation to
CAS REGISTRY NUMBERS: 109-86-4; 110-80-5; 111-76-2; 112-34-5; 1320-67-8; 52125-53-8 (NLM)

Health effects assessment for hexachlorobutadiene
United States Environmental Protection Agency
Environ. Criter. Assess. Off., Cincinnati
Report; ISS EPA/540/1-86/053;
Order No. PB86-134640/GAR,, 1984,34pp.
CBAC COPYRIGHT: CHEM ABS Chlorobutadine exposure health hazard review;Health hazard Of hexachlorobutadiene exposure, assessment of;Hygiene Hexachlorobutadiene exposure health risk assessment in relation to
CAS REGISTRY NUMBERS: 87-68-3 (NLM)

Hycanthone: an unresolved case study in risk assessment.
de Serres FJ
Mutat Res; VOL 164, ISS 4, 1986, P199-201
Keywords: Animal, Hycanthone *TOXICITY, Mutagens *, Research Design, Risk, Species Specificity, Thioxanthenes *TOXICITY
CAS REGISTRY NUMBERS: 3105-97-3 (NLM)

Monograph on Human Esposure to Chemicals in the Workplace: Hydrazine
(Final rept.)
Santodonato, J.
Syracuse Research Corp., NY. Center for Chemical Hazard Assessment.
Sponsor: National Cancer Inst., Bethesda, MD. Div of Cancer Etiology.
Report No.: SRC-TR-84-533
July 85
PB86-155108/XAB

The report presents a summary and evaluation of information relevant to an occupational hazard assessment of the chemical. Pertinent toxicologic data were extending back approximately ten years from 1984. No attempt was made to exhaustively review the toxicologic literature; where appropriate the reader is referred to comprehensive reviews on this topic. Special attention in this report was focused on summarizing the available information regrading the carcinogenic potential of the chemical.
CAS REGISTRY NUMBERS: 302-01-2 (NLM)

Health effects assessment for iron (and compounds)
United States Environmental Protection Agency
Environ. Criter. Assess. Off., Cincinnati
Report; ISS EPA/540/1-86/054;
Order No. PB86-134657/GAR,, 1984,45pp.

CBAC COPYRIGHT: CHEM ABS Iron exposure health hazard review;Health hazard Of iron exposure, assessment of;Hygiene Iron exposure health risk assessment in relation to
CAS REGISTRY NUMBERS: 7439-89-6 (NLM)

****Health effects assessment for lindane**
United States Environmental Protection Agency
Environ. Criter. Assess. Off., Cincinnati
Report; ISS EPA/540/1-86/056;
Order No. PB86-134673/GAR,, 1984,49pp.
CBAC COPYRIGHT: CHEM ABS Lindane health hazard assessment review;Health hazard Of lindane exposure, assessment of;Hygiene Lindane exposure health effect assessment in relation to
CAS REGISTRY NUMBERS: 58-89-9 (NLM)

****Inhalation toxicity of lithium combustion aerosols in rats.**
Greenspan BJ, Allen MD, Rebar AH
J Toxicol Environ Health; VOL 18, ISS 4, 1986, P627-37
Studies of the acute inhalation toxicity of lithium combustion aerosols were undertaken to aid in evaluating the health hazards associated with the proposed use of lithium metal in fusion reactors. A system was developed to generate lithium combustion aerosols by sweeping vapor from molten lithium metal into a controlled air atmosphere. Male and female F344/Lov rats, 9-12 wk of age, were exposed once for 4 h to concentrations of 2600, 2300, 1400, or 620 mg/m3 of aerosol (MMAD = 0.69 micrometer, sigma g = 1.45) that was approximately 80% lithium carbonate and 20% lithium hydroxide to determine the acute toxic effects. Fourteen-day LC50 values (with 95% confidence limits) of 1700 (1300-2000) mg/m3 for the male rats and 2000 (1700-2400) mg/m3 for the female rate were calculated. Clinical signs of anorexia, dehydration, respiratory difficulty, and perioral and perinasal encrustation were observed. Body weights were decreased the first day after exposure in relation to the exposure concentration. In animals observed for an additional 2 wk, body weights, organ weights, and clinical signs began to return to preexposure values. Histopathologic examination of the respiratory tracts from the animals revealed ulcerative or necrotic laryngitis, focal to segmental ulcerative rhinitis often accompanied by areas of squamous metaplasia, and, in some cases, a suppurative bronchopneumonia or aspiration pneumonia, probably secondary to the laryngeal lesions. The results of these studies indicate the moderate acute toxicity of lithium carbonate aerosols and will aid in the risk analysis of accidental releases of lithium combustion aerosols. (NLM)
CAS REGISTRY NUMBERS: 7439-93-2

****Health effects assessment for manganese (and compounds)**
United States Environmental Protection Agency
Environ. Criter. Assess. Off., Cincinnati
Report; ISS EPA/540/1-86/057;
Order No. PB86-134681/GAR,, 1984,66pp.

CBAC COPYRIGHT: CHEM ABS Manganese health hazard assessment review;Health hazard Of manganese exposure, assessment of,;Hygiene Manganese health effect assessment in relation to
CAS REGISTRY NUMBERS: 7439-96-5 (NLM)

**Monograph on Human Exposure to Chemicals in the Workplace: Mercaptans

(Final rept.)
Santodonato, J.
Syracuse Research Corp., NY. Center for Chemical Hazard Assessment.
Sponsor: National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Report No.: SRC-TR-85-187
Jul 85 37p
PB86-155090/XAB
Sponsored by National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Contract No.: N01-CP-26002-03

The report presents a summary and evaluation of information relevant to an occupational hazard assessment of the chemical. Pertinent toxicologic data were located through on-line and manual literature searches for the period extending back approximately ten years from 1984. No attempt was made to exhaustively review the toxicologic literature; where appropriate the reader is referred to comprehensive reviews on the topic. Special attention in the report was focused on summarizing the available information regarding the carcinogenic potential of the chemical.
(NTIS)

**Hazard evaluation of monochloroacetone

Sargent EV, Kirk GD, Hite M
American Industrial Hygiene Association Journal July 1986, Vol.47, No.7, p.375-378. 9 ref.

This compound was introduced in 1914 as a war gas, and is presently used as a chemical intermediate in various industrial processes. Risk assessment indicates that monochloroacetone is extremely irritating to the eyes and skin; exposure leads to delayed vesication and swelling of the skin; inhalation of MCA produces irritation to the mucosa of the upper respiratory tract. MCA has been shown to be an initiator of tumours in mouse skin; MCA may therefore be considered as a presumptive tumorigen, even though it was negative in Ames mutagenicity tests. It is recommended that direct contact with liquid and vapours be prevented through strict engineering controls and that air
CAS REGISTRY NUMBERS: 78-95-5 (NLM)

**Models for respiratory cancer in nickel refinery workers.

Kaldor J, Peto J, Easton D, Doll R, Hermon C, Morgan L
Division of Epidemiology and Biostatistics, International Agency for Research on Cancer, Lyon, France.
JNCI; VOL 77, ISS 4, 1986, P841-8

Lung and nasal sinus cancer death rates among employees of a nickel refinery in South Wales were examined from the standpoint of quantifying the relationship between exposure and the risk of these two cancers. Areas in the refinery associated with high risk were identified by using a matched case-control approach, and a simple index of exposure for each man was constructed accordingly based on the duration of time spent in these areas. The dependence of relative risk and absolute excess risk for lung and nasal sinus cancers on age at first employment, calendar period of first employment, time since first employment, and duration of exposure in high-risk areas was then analyzed. The relative risk for nasal sinus cancer increased sharply with increasing age at first exposure but remained roughly constant throughout the period of follow-up, while that for lung cancer was independent of age at first exposure and dropped sharply with increasing time since first employment. The implications and limitations of these analyses are discussed in relation to the multistage theory of carcinogenesis and occupational risk assessment.
CAS REGISTRY NUMBERS: 7440-02-2 (NLM)

RELATIVE RISK ASSESSMENT OF VARIOUS SOURCES OF NITRITE
TANNENBAUM SR
PROC. MEAT IND. RES. CONF. 1979, PP. 67-73
Keywords: NITRITE, ETIOLOGY, METABOLISM, RISK, NITRITES, FOOD ADDITIVES, NITRATES, SALIVA, INTESTINES, STOMACH
CAS REGISTRY NUMBERS: 14797-65-0 (NLM)

****Evaluation of the Oil Spill Risk Analysis as Presented in St. George Basin Sale 89 EIS.**
Anon
Jones and Stokes Associates, Inc., Bellevue, WA.
Environmental Protection Agency, Seattle, WA. Region X.
NTIS/PB86-190337, 102p
TD3: The report describes and evaluates the current approach to the oil spill risk analysis as conducted for St. George Basin Sale 89. An oil spill trajectory analysis (OTSA) model was developed for the U.S. Minerals Management Service to calculate the risk of oil spills damaging environmentally sensitive resources. The purpose of the report is to review the Minerals Management Service oil spill risk analysis as presented in the Lease Sale 89 EIS. Sponsored by Environmental Protection Agency, Seattle, WA. Region X. (NLM)

****Monograph on Human Exposure to Chemicals in the Workplace: Pentachlorophenol**
(Final rept.)
Santodonato, J.
Syracuse Research Corp., NY. Center for Chemical Hazard Assessment.
Sponsor: National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Report No.: SRC-TR-84-535

Jul 85 45p
PB86-155116/XAB
Sponsored by National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Contract No.: N01-CP-26002-03

The report presents a summary and evaluation of information relevant to an occupational hazard assessment of the chemical. Pertinent toxicologic data were located through on-line and manual literature searches for the period extending back approximately ten years from 1984. No attempt was made to exhaustively review the toxicologic literature; where appropriate the reader is referred to comprehensive reviews on this topic. Special attention in this report was focused on summarizing the available information regarding the carcinogenic potential of the chemical.
CAS REGISTRY NUMBERS: 87-86-5 (NTIS)

****Health effects assessment for phenanthrene**
United States Environmental Protection Agency
Environ. Criteria Assessment Off., Cincinnati
Report; ISS EPA/540/1-86/029;
Order No. PB86-134400/GAR,, 1984,24pp.
CBAC COPYRIGHT: CHEM ABS Health hazard assessment phenanthrene;Health hazard Of phenanthrene
CAS REGISTRY NUMBERS: 85-01-8 (NLM)

AN AQUATIC HAZARD ASSESSMENT PICLORAM
MAYES MA, OLIVER GR
BAHNER, R. C. AND D. J. HANSEN (ED.). ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS) SPECIAL TECHNICAL PUBLICATION, 891. AQUATIC TOXICOLOGY AND HAZARD ASSESSMENT; EIGHT SYMPOSIUM, FORT MITCHELL, KY., USA, APR. 15-17, 1984. X+480P. AMERICAN SOCIETY FOR TESTING AND MATERIALS: PHILADELPHIA, PA., USA. ILLUS. ISBN 0-8031-0437-5.; 0 (0). 1985 (RECD. 1986). 253-269.
BIOSIS COPYRIGHT: BIOL ABS. RRM SALVELINUS-NAMAYCUSH PIMEPHALES-PROMELAS GAMMARUS-LACUSTRIS DAPHNIA-MAGNA CRASSOSTREA-VIRGINICA TORDON GRAZON AMDON HERBICIDE STORMWATER RUNOFF LC-50 NONPOINT SOURCE POLLUTION
CAS REGISTRY NUMBERS: 1918-02-1 (NLM)

****A REVIEW OF THE FOOD AND DRUG ADMINISTRATION RISK ANALYSIS FOR POLYCHLORINATED BIPHENYLS IN FISH.**
MAXIM LD, HARRINGTON L
REGUL. TOXICOL. PHARMACOL. 1984, 4() 192-219
Keywords: HYPERTENSION, HUMAN, ANIMAL, ANALYSIS, REVIEW, RISK UNITED STATES, POLYCHLOROBIPHENYL COMPOUNDS, FISH, UNITED STATES FOOD AND DRUG ADMINISTRATION, TOLERANCE, STANDARDS, RESEARCH MODELS, MATHEMATICAL, MODELS, BIOLOGICAL (NLM)

****Health effects assessment for pyrene**
United States Environmental Protection Agency

Environ. Criteria Assessment Off., Cincinnati
Report; ISS EPA/540/1-86/030;
Order No. PB86-134418/GAR,, 1984,25pp.
CBAC COPYRIGHT: CHEM ABS Health hazard assessment pyrene;Health hazard Of pyrene, assessment of
CAS REGISTRY NUMBERS: 129-00-0 (NLM)

Assessing the risks of radon exposure: The influence of cigarette smoking.
GINEVAN ME, MILLS WA
George Washington Univ., ICU Research, 2300 K. Street NW, Washington, DC 20037.
HEALTH PHYS ; 51 (2). 1986. 163-174.
BIOSIS COPYRIGHT: BIOL ABS. The principal hazard associated with exposure to Rn progeny is lung cancer. However, most lung cancer is caused by smoking, which raises a dual problem of deriving Rn-progeny cancer risk estimates from miner populations who, in large part, are smokers and applying these estimates to the general population whose lung cancer risk, in large part, is determined by smoking habits. We examine current risk estimates for Rn-progeny-induced lung cancer using a cohort life table methodology. Estimates of lifetime probability of dying of lung cancer, average loss in life expectancy due to premature lung cancer death, and loss in life expectancy per premature lung cancer death are calculated for the general population for 1969 and 1978, nonsmokers, and smokers. These calculations demonstrate that such risk estimates are affected by smoking, and by trends in smoking habits, in several ways. Major smoking-related factors in this interaction are the proportion of smokers in the mining population used and the assumed interaction (additive of multiplicative) between lung cancer risk, Rn-progeny exposure, and smoking history. At this time the data are not sufficient to recommend one particular modeling approach. However, our evaluation demonstrates that broad statements about Rn-progeny lung cancer risk such as "xcancers/106 person working level month", while informative, are incomplete without further specification. Any risk assessment must clearly state the population assumed to be at risk and the risk model assumed to be operating. Finally, the caveats appropriate to these assumptions should also be enunciated.
CAS REGISTRY NUMBERS: 10043-92-2 (NLM)

****THE VALIDITY OF RISK ASSESSMENT FOR RADON DAUGHTER INDUCED LUNG CANCER**
STEINHAEUSLER F
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT HUMAN EPIDEMIOLOGICAL STUDIES ANIMAL INHALATION STUDIES THEORETICAL DOSIMETRIC MODELING OCCUPATIONAL EXPOSURE NON-OCCUPATIONAL EXPOSURE
CAS REGISTRY NUMBERS: 10043-92-2 (NLM)

**Health effects assessment for selenium (and compounds)

United States Environmental Protection Agency
Environ. Criter. Assess. Off., Cincinnati
Report; ISS EPA/540/1-86/058;
Order No. PB86-134699/GAR,, 1984,63pp.
CBAC COPYRIGHT: CHEM ABS Health hazard assessment selenium review;Health hazard Of selenium exposure, assessment of;Hygiene Selenium health effect assessment in relation to
CAS REGISTRY NUMBERS: 7782-49-2 (NLM)

**Monograph on Human Exposure to Chemicals in the Workplace: Styrene

(Final rept.)
Santodonato, J.
Syracuse Research Corp., NY. Center for Chemical Hazard Assessment.
Sponsor: National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Report No.: SRC-TR-84-1124
Jul 85 68p
PB86-155132/XAB
Sponsored by National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Contract No.: N01-CP-26002-03

The report presents a summary and evaluation of information relevant to an occupational hazard assessment of the chemical. Pertinent toxicologic data were located through on-line and manual literature searches for the period extending back approximately ten years from 1984. No attempt was made to exhaustively review the toxicologic literature; where appropriate the reader is referred to comprehensive reviews on the topic. Special attention in the report was focused on summarizing the available information regarding the carcinogenic potential of the chemical.

CAS REGISTRY NUMBERS: 100-42-5 (NTIS)

**Health risks of sulfur dioxide released from coal-fired plants: a model for general evaluations

De Santis V, Onufrio G
Dep. Phys., Univ. Bologna, Bologna
Environ. Res.; VOL 41, ISS 1, 1986,130-8
CBAC COPYRIGHT: CHEM ABS Health risk sulfur dioxide pollution Model health assessment sulfur dioxide Coal firing health sulfur dioxide;Air pollution By sulfur dioxide, exposure to, health risk assessment of, model for, from coal-fired plants;Health hazard From sulfur dioxide exposure, assessment of, model for;Power Generation of, coal-fired plants for, sulfur dioxide from, health risk of, model for
CAS REGISTRY NUMBERS: 7446-09-5 (NLM)

****Monograph on Human Exposure to Chemicals in the Workplace: Titanium Dioxide**
(Final rept.)
Santondonato, J.
Syracuse Research Corp., NY. Center for Chemical Hazard Assessment.
Sponsor: National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Report No.: SRC-TR-84-804
Jul 85 35p
PB86-155074/XAB
Sponsored by National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Contract No.: N01-CP-26002-03

The report presents a summary and evaluation of information relevant to an occupational hazard assessment of the chemical. Pertinent toxicologic data were located through on-line and manual literature searches for the period extending back approximately ten years from 1984. No attempt was made to exhaustively review the toxicologic literature; where appropriate the reader is referred to comprehensive reviews on the topic. Special attention in the report was focused on summarizing the available information regarding the carcinogenic potential of the chemical.
CAS REGISTRY NUMBERS: 13463-67-7 (NTIS)

****Monograph on Human Exposure to Chemicals in the Workplace: Vinyl Acetate**
(Final rept.)
Santodonato, J.
Syracuse Research Corp., NY. Center for Chemical Hazard Assessment.
Corp. Source Codes: 059452001
Sponsor: National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Report No.: SRC-TR-85-190
Jul 85 45p
PB86-155157/XAB
Sponsored by National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Contract No.: N01-CP-26002-03

The report presents a summary and evaluation of information relevant to an occupational hazard assessment of the chemical. Pertinent toxicologic data were located through on-line and manual literature searches for the period extending back approximately ten years from 1984. No attempt was made to exhaustively review the toxicologic literature; where appropriate the reader is referred to comprehensive reviews on the topic. Special attention in the report was focused on summarizing the available information regarding the carcinogenic potential of the chemical.
CAS REGISTRY NUMBERS: 108-05-4 (NTIS)

****Monograph on Human Exposure to Chemicals in the Workplace: Xylene**

(Final rept.)
Santodonato, J.
Syracuse Research Corp., NY. Center for Chemical Hazard Assessment.
Sponsor: National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Report No.: SRC-TR-84-1126
Jul 85 51p
PB86-155124/XAB
Sponsored by National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Contract No.: N01-CP-26002-03

The report presents a summary and evaluation of information relevant to an occupational hazard assessment of the chemical. Pertinent toxicologic data were located through on-line and manual literature searches for the period extending back approximately ten years from 1984. No attempt was made to exhaustively review the toxicologic literature; where appropriate the reader is referred to comprehensive reviews on this topic. Special attention in this report was focused on summarizing the available information regarding the carcinogenic potential of the chemical.

CAS REGISTRY NUMBERS: 106-42-3; 108-38-3; 95-47-6 (NTIS)

****Monograph on Human Exposure to Chemicals in the Workplace: Zinc Chromate**

(Final rept.)
Santodonato, J.
Syracuse Research Corp., NY. Center for Chemical Hazard Assessment.
Sponsor: National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Report No.: SRC-TR-84-1125
Jul 85 45p
PB86-155165/XAB
Sponsored by National Cancer Inst., Bethesda, MD. Div. of Cancer Etiology.
Contract No.: N01-CP-26002-03

The report presents a summary and evaluation of information relevant to an occupational hazard assessment of the chemical. Pertinent toxicologic data were located through on-line and manual literature searches for the period extending back approximately ten years from 1984. No attempt was made to exhaustively review the toxicologic literature; where appropriate the reader is referred to comprehensive reviews on the topic. Special attention in the report was focused on summarizing the available information regarding the carcinogenic potential of the chemical.

CAS REGISTRY NUMBERS: 13530-65-9 (NTIS)

**Studies on the Inhalation Toxicity of Dyes Present in Colored Smoke Munitions: Aerosol Measurements in the Workplace at Pine Bluff, Arkansas.

Henderson RF, Newton GJ, Cheng Y, Chen B, Hanson RL
Lovelace Biomedical and Environmental Research Inst.
Albuquerque, NM.
NTIS/AD-A166 459/8, 35p

TD3: The Lovelace Inhalation Toxicology Research Institute has been conducting inhalation toxicity studies on the organic dyes used in colored smoke munitions to provide a health hazard assessment for the workers engaged in fabrication of these smoke munitions. This report summarizes the results of a field sampling effort at the United States Army's Pine Bluff Arsenal to measure the size distributions and aerosol concentrations to which workers might be exposed. Aerosol samples were taken in the workplace during routine operation of the colored smoke grenade fabrication facility. During this sampling period, the M18 yellow smoke grenade was being produced. Filter samples were used to determine the concentration of airborne dye-containing material and cascade impactors were used to determine the particle size distributions. Aerosol samples were analyzed for solvent yellow (SY) by reverse-phase, high-pressure liquid chromatography (HPLC). Dye-containing aerosol concentrations ranged from 0.1 to about 1.5 mg/m3 in the general vicinity of some of the workers. Chemical analyses showed that 40 percent of the total airborne particulate matter was SY dye. Impactor samples indicated that 50-70% of the aerosol was of a size that could be inhaled. Thus the range of air concentrations for worker exposures to the SY dye was <0.5 mg/cum. Inside protective acrylic curtains that are used to reduce personnel exposures, the concentration was about 10 fold higher with a maximum of 32 mg/cum at a fill and press station. Final rept. Sep 84-Nov 85, (NLM)

Exposure to rare earth dusts - Risk analysis

Peltier A
Cahiers de notes documentaires - S:ecurit:e et hygi:ene du travail 1st Quarter 1986, No.122, Note No.1566-122-86, p.21-23. 17 ref.

Rare earth elements (or lanthanides) are 15 metallic elements with similar chemical properties. Their properties are described, as are their uses in industry (which are rapidly increasing) and their toxicity. About 40 samples from the environment were analysed in order to determine the cerium, neodymium, lanthanum and samarium concentration in the air of selected workplaces. The concentrations were highly variable (0.001 to 15mg/m:3:), and difficult to evaluate because of the lack of reference exposure limits.

CAS REGISTRY NUMBERS: 7439-91-0; 7440-45-1, 7440-00-8, 7440-19-9 (NLM)

A generic probabilistic risk analysis for a high-level waste repository.
Cohen BL
Department of Physics, University of Pittsburgh, PA 15260
Health Phys; VOL 51, ISS 4, 1986, P519-28
A generic probabilistic risk analysis (PRA) is developed for high-level radioactive waste buried in a repository. The basic assumption is that an atom of buried waste has the same probability of escape as an atom of average rock at the same depth. Corrections are applied for variation of ground-water flow with depth, and for the fraction of ingested material derived from rock versus from soil. The final result is that we may eventually expect 0.012 deaths/GWe-yr. It is shown that this analysis is a PRA, and that the basic assumption is a conservative one--more likely to overestimate than to underestimate the hazard. This health impact is compared with those from other wastes generated in producing electricity. (NLM)

****Hazardous Waste Tanks Risk Analysis.**
Anon
ICF, Inc., Washington, DC.
Pope-Reid Associates, Inc., St. Paul, MN.
Environmental Protection Agency, Washington, DC. Office of Solid Waste.
NTIS/PB86-212289, 324p
Contract EPA-68-01-6621
TD3: The purpose of the analysis was to assess the human health risks associated with: (1) the population of hazardous waste tanks under the current regulatory approach; and (2) the population of hazardous waste tanks under the various regulatory strategies considered in the analysis included interim status and permitted hazardous waste tanks, 90-day accumulation tanks, and small quantity generator interim status, permitted or 180-day accumulation tanks. The regulatory alternatives examined in the analysis included no revisions, full secondary containment, partial secondary containment and ground water monitoring, leak testing and ground water monitoring, and corrosion protection. Analysis of these regulatory alternatives allows for direct comparisons between risks presented by hazardous waste tanks under alternative regulatory scenarios. Draft rept. Supersedes PB86-192937. Prepared in cooperation with Pope-Reid Associates, Inc., St. Paul, MN. Sponsored by Environmental Protection Agency, Washington, DC. Office of Solid Waste. (NLM)

ASTM AMERICAN SOCIETY FOR TESTING AND MATERIALS SPECIAL TECHNICAL PUBLICATION 854. AQUATIC TOXICOLOGY AND HAZARD ASSESSMENT SEVENTH SYMPOSIUM MILWAUKEE WISCONSIN USA APRIL 17-19 1983
CARDWELL, R. D., R. PURDY AND R. C. BAHNER (ED.). ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS) SPECIAL TECHNICAL PUBLICATION, 854. AQUATIC TOXICOLOGY AND HAZARD ASSESSMENT; SEVENTH SYMPOSIUM, MILWAUKEE, WISC., USA, APR. 17-19, 1983. X+587P. AMERICAN SOCIETY FOR TESTING AND MATERIALS: PHILADELPHIA, PA., USA. ILLUS. ISBN 0-8031-0410-3.; 0 (0). 1985 (RECD. 1986). X+587P.
BIOSIS COPYRIGHT: BIOL ABS. RRM BOOK MEETING BIOGEOCHEMISTRY BIOASSAY BIOMONITORING ENVIRONMENTAL FATE BIOACCUMULATION BIOAVAILABILITY SEDIMENT WATER POLLUTION WATER QUALITY CRITERIA USA (NLM)

ASTM AMERICAN SOCIETY FOR TESTING AND MATERIALS SPECIAL TECHNICAL PUBLICATION 891. AQUATIC TOXICOLOGY AND HAZARD ASSESSMENT EIGHT SYMPOSIUM FORT MITCHELL KENTUCKY USA APRIL 15-17 1984
BAHNER, R. C. AND D. J. HANSEN (ED.). ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS) SPECIAL TECHNICAL PUBLICATION, 891. AQUATIC TOXICOLOGY AND HAZARD ASSESSMENT; EIGHT SYMPOSIUM, FORT MITCHELL, KY., USA, APR. 15-17, 1984. X+480P. AMERICAN SOCIETY FOR TESTING AND MATERIALS: PHILADELPHIA, PA., USA. ILLUS. ISBN 0-8031-0437-5.; 0 (0). 1985 (RECD. 1986). X+480P.
BIOSIS COPYRIGHT: BIOL ABS. RRM BOOK MEETING WATER POLLUTION (NLM)

****Assessing chemical hazards**
Kenaga EE
Environ. Sci. Technol.; VOL 20, ISS 7, 1986,660-2
CBAC COPYRIGHT: CHEM ABS Review toxic chem hazard assessment;Chemicals Environmental pollution by, assessment of Toxic;Environmental pollution By toxic chems., assessment of;Water pollution By toxic chems., assessment of (NLM)

****Assessment of the safety of dioctyl adipate in freshwater environments**
Felder JD, Adams WJ, Saeger VW
Monsanto Co., St. Louis
Environ. Toxicol. Chem.; VOL 5, ISS 8, 1986,777-84
CBAC COPYRIGHT: CHEM ABS The safety of dioctyl adipate (DOA) [103-23-1] in freshwater environments was studied. DOA is relatively insol. in water and is likely to partition to sediment and biota in the aquatic environment. Biodegrdn. was rapid and extensive under conditions simulating sewage systems and the natural environment. Measured environmental concns. of DOA averaged <0.5 mug/L in natural surface waters. DOA was not

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acutely toxic to algae and fish at or above its water soly. of 0.78 mg/L. It was acutely and chronically toxic to Daphnia magna at 480-850 and 24-52 mug/L, resp. A bioconcn. study with bluegill (Lepomis macrochirus) showed that DOA is not an accumulative or persistent chem. in this species. The mean 28-day bioconcn. factor was 27. A comparison of the mean environmental water concns. of DOA with lab. chronic toxicity values for D. magna showed a safety margin of .apprx.3 under present use and disposal patterns, DOA presents a small hazard to the freshwater aquatic environment.
CAS REGISTRY NUMBERS: 103-23-1 (NLM)

**ECOLOGY AND ESTUARINE IMPACT ASSESSMENT LESSONS LEARNED FROM THE HUDSON RIVER USA AND OTHER ESTUARINE EXPERIENCES

LIMBURG KE, LEVIN SA, HARWELL CC
J ENVIRON MANAGE; 22 (3). 1986. 255-281.
BIOSIS COPYRIGHT: BIOL ABS. RRM ENVIRONMENTAL RISK ASSESSMENT ENVIRONMENTAL PROTECTION FIELD EXPERIMENTS MICROCOSM MESOCOSM MATHEMATICAL MODEL HISTORY (NLM)

Hazard Analysis Critical Control Point (HACCP) concept: application to bivalve shellfish purification systems.

West PA
J R Soc Health; VOL 106, ISS 4, 1986, P133-40
Keywords: Animal, England, Food Poisoning *PREVENTION & CONTROL, Gastroenteritis *PREVENTION & CONTROL, Hepatitis *PREVENTION & CONTROL, Human, Shellfish *STANDARDS, Wales (NLM)

**Margins of uncertainty in ecotoxicological hazard assessment

Slooff W, Van Oers JA M, De Zwart D
Natl. Inst. Public Health Environ. Hyg., Bilthoven
Environ. Toxicol. Chem.; VOL 5, ISS 9, 1986,841-52
CBAC COPYRIGHT: CHEM ABS Margins of uncertainty in predicting toxicity from 1 species to another, from acute to chronic exposures and from single species to higher levels of biol. organization were detd. by regression and correlation analyses. Based on the acute sensitivities of 35 aquatic species to 15 compds., no species was found to be particularly sensitive to all chems. and the 95% uncertainty factor (UF) ranged from 3 to 1985. Analyses of acute and chronic sensitivities for the same species to 164 chems. resulted in the acute/chronic relationship log NOEC = -1.28 + 0.95 log L(E)C50 (r = 0.89) and the UF of 25.6 (where NOEC is the no obsd. effect concn.). The comparison of the lowest acute and corresponding ecosystem effect levels for 34 chems. indicated the relationship log NOEC(ecosystems) = -0.55 + 0.81 log L(E)C50 (r = 0.77) and the UF of 85.7. As to the predictability of ecosystem effect levels from chronic single species data, the following relation was found: log NOEC(ecosystems) = 0.63 + 0.85 log NOEC (r = 0.85), with a UF of 33.5. These data indicate that acute testing is not pointless; it offers a statistical base for the use of acute toxicity information in the hazard assessment of chems. in the aquatic

environment.
CAS REGISTRY NUMBERS: 50-00-0; 50-29-3; 56-38-2; 60-57-1; 72-43-5; 79-01-6; 84-74-2; 86-50-0; 87-86-5; 88-06-2; 88-30-2; 92-52-4; 94-75-7; 95-76-1; 106-48-9; 115-28-6; 120-83-2; 127-18-4; 298-00-0; 330-54-1; 554-00-7; 1194-65-6; 1397-94-0; 1912-24-9; 2385-85-5; 2764-72-9; 7439-97-6; 7440-38-2; 7440-43-9; 7440-50-8; 7440-66-6; 7722-64-7; 7773-06-0; 7775-09-9; 8001-35-2; 11067-82-6; 35367-38-5; 52315-07-8 (NLM)

**PESTICIDES IN THE MARINE ENVIRONMENT

NIMMO DR
192ND AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, ANAHEIM, CALIF., USA, SEPT. 7-12, 1986.
ABSTR PAP AM CHEM SOC; 192 (0).
1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT WATER POLLUTION ENVIRONMENTAL HAZARD ANALYSIS (NLM)

**Population and Ecosystem Theory in Ecological Risk Assessment.

Barnthouse LW, O'Neill RV, Bartell SM, Suter GW
Oak Ridge National Lab., TN.
Department of Energy, Washington, DC.
NTIS/DE86008992, 31p
CONF-860203-16, Contract AC05-84OR21400

TD3: Assessments of ecological risks associated with toxic contaminant releases necessarily involve extrapolation from observed responses of simplified laboratory systems to predicted responses of complex natural systems. In this paper we evaluate the utility of population and ecosystem theory for making these extrapolations, based on: (1) the success of the theory when applied to other environmental assessment and resource management problems, and (2) the degree of scientific consensus concerning the appropriate approaches to modeling populations and ecosystems. The applications we review include fisheries management, water-quality assessment and management, and power-plant-impact assessment. We conclude that neither population nor ecosystem theory can now provide models that accurately predict the long-term ecological consequences of toxic contaminant releases. However, we show how short-term effects of toxic contaminants on fish populations can be projected by use of models employed in fisheries management. Further, we show how ecosystem theory can, in spite of its relative immaturity, make immediate contributions to understanding the qualitative responses of complex ecological systems to toxic contaminants. (ERA citation 11:028386) 19. midyear topical symposium on health physics considerations in decontamination and decommissioning, Knoxville, TN, USA, 2 Feb 1986. (NLM)

**A proposal for the reduction of animal numbers required for the acute toxicity to fish test (LC50 determination).

DOUGLAS MT, CHANTER DO, PELL IB, BURNEY GM
Huntingdon Res. Cent. plc, Huntingdon, Cambridgeshire, PE18 6ES,

UK.
AQUAT TOXICOL (AMST); 8 (4). 1986. 243-250.
BIOSIS COPYRIGHT: BIOL ABS. Juvenile rainbow trout (Salmo gairdneri) were exposed to 10 common industrial and agricultural chemicals in a series of acute toxicity to provide data for the evaluation of the test design currently employed in hazard assessment for novel chemicals in the aquatic environment. Analysis of these data revealed than the widely employed design of 10 fish at each of 5 concentrations covering one order of magnitude could be modified to one of 7 fish at each of 4 concentrations with minimal reduction in the precision of the result (i.e., the LC50 value). The adoption of this modification to test design, however, would result in a reduction of approximately 40% of the number of experimental animals used in bioassay programmes.
CAS REGISTRY NUMBERS: 27176-87-0; 1461-22-9; 573-58-0; 141-78-6; 121-75-5; 120-82-1; 87-86-5; 63-25-2; 62-53-3; 60-57-1 (NLM)

****Rapid Aquatic Toxicity Assay Using Incorporation of Tritiated-Thymidine into Sea Urchin, 'Arbacia punctulata', Embryo: Evaluation of Toxicant Exposure Procedures,**
Nacci DE, Jackim E,
Environmental Research Lab., Narragansett, RI.
JRB Associates, Inc., Narragansett, RI. Marine Services Branch.
NTIS/PB86-184454, 15p
ERLN-632, EPA/600/D-86/077
TD3: Toxicity of substances in seawater was measured using growth inhibition of embryonic sea urchins during a short period after fertilization. Growth of Arbacia punctulata embryos was monitored by incorporation of tritium-labeled thymidine. The paper presents a comparison of toxicant exposure procedures using the Arbacia embryo thymidine incorporation test. Toxicant exposure began before, at the time of, or after fertilization and continued for 4 h following fertilization. In addition to the eight organic chemicals tested for comparison to acute toxicity values for other species, several chemicals with embryotoxic potentials (tumor promoters and teratogens) were tested to determine differential sensitivities of exposed life-stages: unfertilized egg, fertilization, and early embryo. EC50 values for any one substance were not significantly changed by exposure modification. Toxicity values for exposures that included fertilization as well as early embryo growth were at least as sensitive as post-fertilization exposure values for all compounds tested except one. Because of technical ease and potential sensitivity, toxicant exposure that includes fertilization as well as early embryo growth (but not unfertilized egg exposure) is recommended for future testing. Pub. in Aquatic Toxicology and Hazard Assessment: Eighth Symposium, ASTM STP 891, p382-394 1985. Prepared in cooperation with JRB Associates, Inc., Narragansett, RI. Marine Services Branch. (NLM)

****User's Manual for Ecological Risk Assessment.**
Barnthouse LW, Suter GW
Oak Ridge National Lab., TN.
Department of Energy, Washington, DC.
NTIS/DE86010063, Portions of this document are illegible in microfiche products. Original copy available until stock is exhausted., 222p
ORNL-6251, Contract AC05-84OR21400
TD3: This report presents the results of a four-year project on environmental risk analysis of synfuels technologies. The overall objective was to develop a risk assessment methodology capable of: (1) ranking the waste streams in a process by risk to the environment; (2) estimating the change in environmental risk that would be achieved using alternative control technology options; (3) estimating the sensitivity of risk estimates to site-dependent variables; and (4) identifying research problems contributing the greatest uncertainty to risk estimates. An initial suite of five potentially useful techniques was applied in a preliminary risk analysis of indirect coal liquefaction technologies. As a result of this application, it was determined that two of the original five techniques were unsuitable for synfuels risk assessments. The remaining three were developed further and applied in a unit-release risk assessment, a revised indirect liquefaction risk assessment, a direct liquefaction risk assessment, and an oil shale risk assessment. This users' manual is intended to facilitate wider use of ecological risk analysis techniques by: (1) presenting the rationale for the approach developed in this project; (2) describing the derivation and mechanics of the three techniques used in the synfuels risk assessments; and (3) discussing the limitations and other potential applications of ecological risk assessment methods. (ERA citation 11:031413) (NLM)

CORPORATE RISK ASSESSMENT

Chemical process hazard review
Hoffmann JM, Maser DC
American Chemical Society, 1155 Sixteenth St., NW, Washington, DC 20036, USA, 1985. 121p. Illus. Bibl.
Based on a symposium at St. Louis, Missouri (USA), 8-13 April 1984, this book provides a comprehensive discussion of potential hazards of new and existing chemical processes. It is intended for process developers and safety personnel. Contents: chemical process hazard review; process hazard review in a chemical research environment; hazard evaluation in process development; risk assessment techniques for experimentalists; hazard and operability study, a flexible technique for process system safety and reliability analysis; hazard avoidance in the processing of pharmaceuticals; thermochemical hazard evaluation; thermal runaway reactions - hazard evaluation; the thermochemical and hazard data of chemicals - estimation using the ASTM CHETAH prgramme; kinetic and reactor modeling - hazard evaluation and scale-up of a complex reaction; the nitration of 5-chloro-1,3-dimethyl-1H-pyrazole - risk assessment before pilot plant scale-up. (NLM)

****Environmental risk assessment of industrial facilities: techniques, regulatory initiatives and insurance.**
Murphy, MJ
Sci Total Environ; VOL 51, 1986, P185-96
CODEN: UJ0
Most companies that manufacture, handle or dispose of chemicals or petroleum products have the potential to cause environmental impairment, especially by longterm or gradual release of materials into the environment. This impairment creates potential liabilities that result from numerous regulations as well as from common law. One way to identify these potential environmental liabilities and exposures is through environmental risk assessment. The primary focus of an environmental risk assessment is to evaluate the potential for off-site gradual impairment arising from a company's operations. Such an assessment reviews the status of the firm's environmental risk exposure and is a useful internal tool for corporate planning. There are three major objectives in performing an environmental risk assessment: risk identification, risk evaluation and risk reduction. To identify risk, numerous criteria are used to determine the individual factors contributing to the potential for off-site exposure. The interaction of these individual risk factors is then used to evaluate the overall potential for gradual environmental impairment. After the risks have been evaluated, recommendations are made to reduce the potential exposures. In addition, implementation of risk reduction strategies accomplish the objective of legislative initiatives for protecting human

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health and the environment. Environmental risk management can and should be encouraged through legislative initiatives. (NLM)

****The industrial role in risk assessment.**
Sci Total Environ; Vol. 51m 1986, P75-80
Moolenarr RJ
Industry has a major role in the assessment and management of risk to society from its operations. Much of the basic knowledge of manufacturing operations, product distribution, use and ultimate disposal of products and byproducts resides in industry. Basic data on the health and environmental effects of materials in commerce has been generated by industry. This information must be utilized in the evaluation of risk so that appropriate management decisions can be made. Experience gained in the industrial sector with risk assessment and management should be of value to government in its oversight role on behalf of society. There is growing realization in both industry and government of the need for more effective communication of risk to the general public in the context of management decisions. (NLM)

POLICY

****Governmental factors in establishment of risk assessment procedures in the United States.**
Robinson WJ
Sci Total Environ; VOL 51, 1986, P69-73
Those political and governmental factors that affect the establishment of risk assessment policies will be identified in terms of their overall impact upon regulatory behavior. Within this description, relevant accounts will be given of actual legislative and political initiatives and actions put forth by concerned industrial, environmental and governmental groups during recent consideration by the U.S. Congress of proposals to establish a central science panel. These accounts will illuminate some of the critical events and deficiencies in industry, science and governmental decision-makers experience in establishing comprehensive, sound risk assessment policies. Lastly, a modestly optimistic scenario is presented in which impending public health issues posed by advances in biotechnology and other developments may give rise to politically acceptable and improved risk assessment and risk management functions. (NLM)

RISK ASSESSMENT AND REGULATORY DECISION MAKING
MUNRO IC , KREWSKI DR
FOOD COSMET. TOXICOL. 1981, 19() 549-560
Keywords: UNITED STATES, REVIEW, RISK, DECISION MAKING, CARCINOGENS, DISEASE MODELS, ANIMAL, MODELS, THEORETICAL THEORETICAL, DOSE-RESPONSE RELATIONSHIP, DRUG (NLM)

RISK ASSESSMENT POLICY IN THE USA
FLAMM WG
OFTEDAL, P. AND A. BROGGER (ED.).
PROGRESS IN CLINICAL AND BIOLOGICAL RESEARCH, VOL. 208.
RISK AND REASON: RISK ASSESSMENT IN RELATION TO ENVIRONMENTAL MUTAGENS AND CARCINOGENS; SATELLITE SYMPOSIUM TO THE FOURTH INTERNATIONAL CONFERENCE ON ENVIRONMENTAL MUTAGENS, OSLO, NORWAY, JUNE 21-22, 1985. XV+189P.
ALAN R. LISS, INC.: NEW YORK, N.Y., USA. ILLUS.
ISBN 0-8451-5058-8.; 0 (0). 1986. 141-150.
BIOSIS COPYRIGHT: BIOL ABS. RRM HUMAN MUTAGENS CARCINOGENESIS TOXICOLOGY (NLM)

The role of risk assessment in food safety policy.
Scheuplein RJ
Basic Life Sci; VOL 38, 1986, P563-71
Carcinogens *, Food Coloring Agents, Food *STANDARDS, Human Legislation *, Quality Control, Risk, United States Food and Drug Administration *, United States (NLM)

SCIENCE POLICY, ETHICS, AND ECONOMIC METHODOLOGY.
Shrader-Frechette, Kristin S.
Hingham, Ma, Kluwer Academic, 1985
336 p.

LEGAL ASPECTS

****ABA standing committee symposium, dealing with risk: the courts, the agencies and Congress.**
Environmental Law Reporter 16:10187-10229 Ag '86
American Bar Association conference report, with panel discussions.
Environmental risk assessment. (PAIS)

BIBLIOGRAPHIES AND OTHER SOURCES .... this section highlights a variety of documents, including bibliographies, serial publications, directories, special subject collections, indexes, etc. These sources lead to information and data on specific chemicals and chemical groups as well as on many of the intricate components of risk assessment including exposure, fate, toxicity, chemical safety and handling, physical and chemical properties, standards and regulations, manufacturing and use, etc.

CARCINOGENIC RISK ASSESSMENT: A GUIDE TO THE LITERATURE
KREWSKI D, BROWN C
BIOMETRICS 1981, 37(2) 353-366
Keywords: TEA, ANIMAL, ENVIRONMENTAL EXPOSURE, NEOPLASMS, REVIEW,RISK,TIME FACTORS,STATISTICS,BIOLOGICAL ASSAY, CARCINOGENS (NLM)

****National Body-Burden Database. Chemicals Identified in Human Biological Media, 1984. Volume 7, Part 1.**
Cone MV. Ferguson M, Powers CD, Hammons AS
Science Applications International Corp., Oak Ridge, TN. Public Information and Presentations.
Department of Energy, Washington, DC.
NTIS/DE86004687, Portions of this document are illegible in microfiche products. Original copy available until stock is exhausted., 624p
EPA-560/5-84-003-V.7-Pt.1, Contract AC05-81OR20837
TD3: The database provides a central source of systematically collected and organized body-burden data that facilitates the early identification of actual or potential human exposure to environmental contaminants and the assessment of the significance of such exposure. Data included are obtained through routine manual searches of selected scientific journals, augmented by computer searches. The database, which includes the separately published files, Chemicals Identified in Human Biological Media and Chemicals Identified in Feral and Food Animals, contains information on more than 1600 chemicals. The database is used in exposure, hazard and risk assessment; identifying potential human and environmental health problems including sources of contamination; planning research and comparing results; and in teaching at medical and public health schools. The database is under the aegis of the Interagency Collaborative Group on Environmental Carcinogenesis, National Cancer Institute (NCI) and is maintained by the Health and Environmental Information Section, Science Applications International Corporation under the direction of the Exposure Evaluation Division, US Environmental Protection Agency (EPA). Funding is provided through interagency agreements involving NCI, EPA, and the US Department of Energy. (ERA citation 11:028338) (NLM)

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**A COURSE IN ENVIRONMENTAL CHEMICAL HAZARD ASSESSMENT
DUNNETTE DA
192ND AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, ANAHEIM, CALIF., USA, SEPT. 7-12, 1986.
ABSTR PAP AM CHEM SOC; 192 (0).
1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT POLLUTION (NLM)

**National Body-Burden Database. Chemicals Identified in Feral and Food Animals, 1984. Volume 4, Part 2.
Cone MV, Ferguson M, Powers CD, Hammons AS
Science Applications International Corp., Oak Ridge, TN. Public Information and Presentations.
Department of Energy, Washington, DC.
NTIS/DE86004684, Portions of this document are illegible in microfiche products. Original copy available until stock is exhausted., 623p
EPA-560/5-84-004-V.4-Pt.2, Contract AC05-81OR20837
TD3: The database provides a central source of systematically collected and organized body-burden data that facilitates the early identification of actual or potential human exposure to environmental contaminants and the assessment of the significance of such exposure. Data included are obtained through routine manual searches of selected scientific journals, augmented by computer searches. The database, which includes the separately published files, Chemicals Identified in Human Biological Media and Chemicals Identified in Feral and Food Animals, contains information on more than 1600 chemicals. The database is used in exposure, hazard and risk assessment; identifying potential human and environmental health problems including sources of contamination; planning research and comparing results; and in teaching at medical and public health schools. The database is under the aegis of the Interagency Collaborative Group on Environmental Carcinogenesis, National Cancer Institute (NCI), and is maintained by the Health and Environmental Information Section, Science Applications International Corporation under the direction of the Exposure Evaluation Division, US Environmental Protection Agency (EPA). Funding is provided through interagency agreements involving NCI, EPA, and the US Department of Energy. (ERA citation 11:028342) (NLM)

**National Body-Burden Database. Chemicals Identified in Human Biological Media, 1984. Volume 7, Part 2.
Cone MV, Ferguson M, Powers CD, Hammons AS
Science Applications International Corp., Oak Ridge, TN. Public Information and Presentations.
Department of Energy, Washington, DC.
NTIS/DE86004688, Portions of this document are illegible in microfiche products. Original copy available until stock is exhausted., 420p
EPA-560/5-84-003-V.7-Pt.2, Contract AC05-81OR20837
TD3: The database provides a central source of systematically

collected and organized body-burden data that facilitates the early identification of actual or potential human exposure to environmental contaminants and the assessment of the significance of such exposure. Data included are obtained through routine manual searches of selected scientific journals, augmented by computer searches. The database, which includes the separately published files, Chemicals Identified in Human Biological Media and Chemicals Identified in Feral and Food Animals, contains information on more than 1600 chemicals. The database is used in exposure, hazard and risk assessment; identifying potential human and environmental health problems including sources of contamination; planning research and comparing results; and in teaching at medical and public health schools. The database is under the aegis of the Interagency Collaborative Group on Environmental Carcinogenesis, National Cancer Institute (NCI) and is maintained by the Health and Environmental Information Section, Science Applications International Corporation under the direction of the Exposure Evaluation Division, US Environmental Protection Agency (EPA). Funding is provided through interagency agreements involving NCI, EPA, and the US Department of Energy. (ERA citation 11:028341) (NLM)

**National Body-Burden Database. Chemicals Identified in Human Biological Media, 1984. Volume 7, Part 3.
Cone MV, Ferguson M, Powers CD, Hammons AS
Science Applications International Corp., Oak Ridge, TN. Public Information and Presentations.
Department of Energy, Washington, DC.
NTIS/DE86004686, Portions of this document are illegible in microfiche products. Original copy available until stock is exhausted., 517p
EPA-560/5-84-003-V.7-Pt.3, Contract AC05-81OR20837
TD3: The database provides a central source of systematically collected and organized body-burden data that facilitates the early identification of actual or potential human exposure to environmental contaminants and the assessment of the significance of such exposure. Data included are obtained through routine manual searches of selected scientific journals, augmented by computer searches. The database, which includes the separately published files, Chemicals Identified in Human Biological Media and Chemicals Identified in Feral and Food Animals, contains information on more than 1600 chemicals. The database is used in exposure, hazard and risk assessment; identifying potential human and environmental health problems including sources of contamination; planning research and comparing results; and in teaching at medical and public health schools. The database is under the aegis of the Interagency Collaborative Group on Environmental Carcinogenesis, National Cancer Institute (NCI) and is maintained by the Health and Environmental Information Section, Science Applications International Corporation under the direction of the Exposure Evaluation Division, US Environmental Protection Agency (EPA). Funding is provided through interagency agreements involving NCI, EPA, and the US Department of Energy. (ERA citation 11:028340) (NLM)

**National Body-Burden Database: Chemicals Identified in Feral and Food Animals, 1984. Volume 4, Part 1.
Cone MV, Ferguson M, Powers CD, Hammons AS
Science Applications International Corp., Oak Ridge, TN. Public Information and Presentations.
Department of Energy, Washington, DC.
NTIS/DE86004685, Portions of this document are illegible in microfiche products. Original copy available until stock is exhausted., 551p
EPA-560/5-84-004-V.4-Pt.1, Contract AC05-81OR20837
TD3: The database provides a central source of systematically collected and organized body-burden data that facilitates the early identification of actual or potential human exposure to environmental contaminants and the assessment of the significance of such exposure. Data included are obtained through routine manual searches of selected scientific journals, augmented by computer searches. The database, which includes the separately published files, Chemicals Identified in Human Biological Media and Chemicals Identified in Feral and Food Animals, contains information on more than 1600 chemicals. The database is used in exposure, hazard and risk assessment; identifying potential human and environmental health problems including sources of contamination; planning research and comparing results; and in teaching at medical and public health schools. The database is under the aegis of the Interagency Collaborative Group on Environmental Carcinogenesis, National Cancer Institute (NCI), and is maintained by the Health and Environmental Information Section, Science Applications International Corporation under the direction of the Exposure Evaluation Division, US Environmental Protection Agency (EPA). Funding is provided through interagency agreements involving NCI, EPA, and the US Department of Energy. (ERA citation 11:028339) (NLM)

RISK ASSESSMENT: SUBJECT LISTING
EPIDEMIOLOGY AND CLINICAL TOXICOLOGY UNIT, FOOD AND DRUG ADMINISTRATION
SCIENTIFIC LITERATURE COVERAGE LISTING, UNPUBLISHED 1982, 1 P.
Keywords: OCCURRENCE, BIBLIOGRAPHY, DOCUMENTATION, INDEXES, RISK
(NLM)

RISK MANAGEMENT

.... DESCRIBES REGULATORY DECISION-MAKING PROCESSES TO CONTROL AND MANAGE RISK

GENERAL PERSPECTIVE 93
POLICY 99
LEGAL ASPECTS *
HEALTH RISKS 101
CHEMICAL SPECIFIC RISK MANAGEMENT *
HAZARDOUS WASTE *
RADIATION *
ECONOMIC ANALYSIS 103
CORPORATE RISK MANAGEMENT 105
BIBLIOGRAPHIES AND OTHER SOURCES 107

RISK MANAGEMENT

GENERAL PERSPECTIVE .... includes decision-making, acceptable risk, risk-taking (psychology), multi-media approach, cross-media approach, applications, uncertainty, risk/benefit.

****Analysis of the decision making process in chemical safety.**
Stern RM
Sci Total Environ; VOL 51, 1986, P27-62
Risk management, for the control of toxic chemicals in particular, and risky human activity in general, begins with the perception of risk and the identification of hazards. The machinery of quantification and evaluation of risk proceeds in a climate of risk perception, and is affected by the state of such perception among all participants in the process. The management of risk, either through legislation or corporate decision making, although ideally objective, is frequently governed by subjective considerations, especially when those individuals or bodies responsible for management decisions develop a 'local' perception of risk. The details of decision making and the sensitivity of the process to various sources of information is reviewed with emphasis on the control of toxic chemicals. (NLM)

BENEFIT/RISK: WHOSE? WHAT? HOW MUCH?
OSER BL
FOOD TECHNOL. 1978, 32() 55-58 (NLM)

Risk Management
Wideman, R. Max
Project Mgmt Jrnl v17n4 PP: 20-26 Sep 1986
Risk management is the formal process by which risk factors systematically are identified, assessed, and provided for throughout the life of a project and in the best interests of its objectives. Project risk, in the context of project management, is the chance of certain occurrences affecting project goals adversely, the degree of exposure to negative events, and their probable consequences. Project risk is characterized by these risk factors: 1. the risk event, 2. the risk probability, and 3. the amount at stake. A diagram of the risk management breakdown structure is provided that follows the typical order of the Project Management Institute's Body of Knowledge management functions. Risk may be: 1. ignored by default, 2. recognized with no action taken due to policy, or 3. reduced, transferred or shared as part of response planning. Response planning may include defensive actions, such as: 1. mitigation by risk avoidance, 2. deflection with an insurance or contractual plan, and 3. the management of budgeted contingency allowances for uncertainties. Tables. Charts. References. (ABI)

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****The chemical risk management process in Italy. A case study: the Seveso accident.**
Pocchiari F, Silano V, Zapponi G
Sci Total Environ; VOL 51, 1986, P227-35
This paper describes, by means of a unique case study, i.e. the ICMESA accident at Seveso, the process of chemical risk management in Italy under emergency conditions which involved more than 200,000 people and about 1800 ha of a densely populated area. The paper also deals with the aims, the results, and the organizational aspects of the medium- and long-term activities that were carried out to rehabilitate the affected ecological and social systems. Problems of co-ordination at different levels (national, regional, provincial and local), as well as of interaction of decision-makers with scientific and technical experts and local staff responsible for action, have also been addressed.
CAS REGISTRY NUMBER: 1746-01-6 (NLM)

****Hazards: Technology and Fairness.**
Anon
National Academy of Engineering, Washington, DC.
Andrew W. Mellon Foundation, New York.
NTIS/PB86-200151, 123p
ISBN-0-309-03644-5
TD3: The papers in the volume define some important issues in hazard management that are emerging during our national reexamination of environmental policies. Authors have identified three principal themes that resonate throughout current public debate about technological hazards. Part 1 addresses the question of how to regulate hazards--those arising from chronic, low-level exposures and from high-consequence hazards. Part 2 presents articles in hazards equity, compensation, hazardous waste facility siting and hazard compensation. Part 3 presents a set of practical lessons and cautions about managing hazardous technologies. Series on technology and social priorities. Library of Congress catalog card no. 86-2412. Proceedings of a symposium held June 3-4, 1985. Sponsored by Andrew W. Mellon Foundation, New York. (NLM)

Heinrich Revisited
Zeller, Dudley B.
Professional Safety v30n10 pp: 40-42 Oct 1986
The industrial safety movement in England began in the early 1800s in response to the recognition that the toll of killed and injured employees and their dependents was draining society at large. As a result, laws began to slowly emerge. In 1927, H. W. Heinrich of The Travelers Insurance Co. began the first large-scale scientific study of industrial accidents. In so doing, he established 3 basic principles of ''scientific accident prevention'': 1. the creation and maintenance of an active interest in safety, 2. fact finding, and 3. corrective

action based on the facts. Heinrich's contribution was to raise the status of industrial safety to a logical science in which the causes of past accidents could be deduced and those findings used inductively to prevent future accidents. Today, industrial safety is shifting to the concept of risk management, a business discipline designed to prevent, reduce, or protect a company from any source of loss. Risk management is based primarily on financial concerns and is anticipatory in nature. References. (ABI)

****Risk management in chemical safety: some general observations relating to the state of the art.**
Rice AP
Sci Total Environ; VOL 51, 1986, P1-17
Risk management for chemical safety begins with judgement and produces arbitrary regulations. In between, technical risk assessment has value in clarifying the behaviour of particular chemical risk systems. Risk quantification can be useful in some cases and quite misleading in others. In no case can it alone be the decisive factor. In the public's perception, chemicals are feared most for potential insidious exposure in the general environment. Risk management then must deal with high system uncertainty and information heavily influenced by value judgements. The technical contribution to risk assessment is reduced, in real terms, as the decision-making scenario expands with its increasing exposure to system 'noise', interference and misinformation. Improved communication in the system requires the use of simplified language. The suitability of risk estimation methodologies must be assessed in terms of general comprehensibility in the management for chemical safety will remain, perhaps always, more of an art than a science, concerned with an interplay of information that can be 'rationalised' with other information that defies such rationalisation. (NLM)

****RISK MANAGEMENT STRATEGY UNDER THE TOXIC SUBSTANCES CONTROL ACT AND THE FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT.**
TODHUNTER JA
REGUL. TOXICOL. PHARMACOL. 1983, 3() 163-171

*86-064138
****REGULATING INDUSTRIAL RISKS,**
MAINI J. S. ; PELTU M. ; OTWAY H.
IIASA, AUSTRIA,
IIASA REPORT 8, NOV 85 (20)
ASSN REPORT AN APPROPRIATE BALANCE IS NEEDED BETWEEN INDUSTRIAL PROGRESS BASED ON TECHNOLOGICAL INNOVATION AND THE POTENTIAL RISK FROM THESE NEW DEVELOPMENTS TO HEALTH AND ENVIRONMENTAL WELL-BEING. EFFECTIVE REGULATIONS MUST BE APPROPRIATE TO NATIONAL AND REGIONAL CULTURES. IMPORTANT STAGES OF THE REGULATORY PROCESS ARE IDENTIFIED AS STANDARDS SETTING, MONITORING, ENFORCEMENT, AND EVALUATION. GUIDELINES FOR

DECISION MAKERS AND FOR IMPROVING THE EFFECTIVENESS OF RISK MANAGEMENT PROGRAMS ARE INCLUDED. (ENVL)

Risk management and regulatory decisions on pesticides
Moore, J.A.
Sixth International Congress of Pesticide Chemistry 8630083
Ottawa (Canada) 10-15 Aug 1986
International Union of Pure and Applied Chemistry (IUPAC)
Blackwell Scientific Publications, Osney Mead,
Oxford OX2 0EL (UK),
Paper No. 8S-04
Keywords: CHEMISTRY AND CHEMICAL ENGINEERING; ANIMAL AND PLANT SCIENCE (CPI)

****Societal considerations in implementing risk management decisions: towards improving the process.**
Todhunter JA
Sci Total Environ; VOL 51, 1986, P63-8

The risk management process can be seen as a public health activity which requires the expenditure of both public and private resources. As such, an effective risk management system must actually produce gains in public health to justify its cost. Similarly, the system should not force risk managers into decisions which are counterproductive. This requires that risk management take into consideration a variety of societal and technical factors. Among these are the actual nature of the risk involved and the risk trade-offs inherent in a management decision; the benefits associated with the risk generating activity; the practicality of various control options; and the nature of the various parties interested in the control decision. The degree of flexibility with which risk managers have to consider the various factors above depends on the risk management style under which they are constrained to operate. This is usually determined by the governing statutes or policies of the relevant regulatory agencies. These risk management styles run the gamut from zero risk approaches to risk/risk and risk/benefit balancing. Assuming that the risk manager has sufficient flexibility to produce cost effective decisions, the risk management process must still be sufficiently defined, procedurally and technically, to be accessible to interested parties. It also needs to effectively distinguish between risks which can be calculated or postulated and those which can have a practical outcome. (NLM)

****Summary and analysis. (Standing Committee Symposium on Risk Management)**
Wilson, Richard
Environmental Law Reporter 16 10226-10229 Aug 1986
JURISDICTION: United States
Keywords: Environmental protection--conferences and congresses; Risk-benefit assessment--conferences and congresses; Administrative agencies--environmental policy;

Updating the ABCs of Risk Management
Head, George L.
Risk Mgmt v33n10 PP: 50-56 Oct 1986

Risk management is the application of structured common sense to loss exposures. Risk management is also a decision process for selecting and putting into practice those risk management techniques that are most cost-effective for a particular organization. The risk management decision process involves: 1. identifying and analyzing loss exposures and the likelihood of the occurrence of accidents, 2. examining the feasibility of alternative risk management techniques, such as exposure avoidance and loss reduction, 3. selecting the best risk control techniques, based on selected criteria, 4. implementing the chosen methods, and 5. monitoring and improving the program. The management of risk is the responsibility of every manager within every organization because the activities that every manager directs create loss exposures. Charts. (ABI)

POLICY .... includes federal, state and local policy, science, public and regulatory policy.

RIMS Asia/Pacific Conference: Risk Management May Get U.N. Boost
Katz, David M.
National Underwriter (Property/Casualty) v90n44 PP: 3,30
Oct 31, 1986
According to the draft of a study requested by the United Nations (UN), top executives of Third World operations must seek to control losses as vigorously as they pursue profits if risk management is to play a major role in curbing the effects of disasters such as that suffered by Bhopal, India. The study, discussed by Georgia State insurance professor Harold D. Skipper, Jr., at the Risk and Insurance Management Society's first Asia/Pacific Conference, indicates further that multinationals doing business in developing countries should make it a matter of policy to disclose real or potential dangers in the processing of hazardous chemicals. The study also calls for the participation of local governments, local and international insurers, reinsurers, intermediaries, associations, and educators in promoting the notion of risk management in the Third World. Governments, for example, should enact tax policies favorable to risk management. Insurers are urged to give greater credit for deductibles and to improve their risk-management-related services. (ABI)

****Nitrates in ground and drinking water: analysis of policies and regulations.**
Conrad J
Sci Total Environ; VOL 51, 1986, P209-25
On the societal level, risks are the result of collective processes of definition. Accepted risks are mainly the output and secondarily the (scientific) input of these processes. As a consequence, in this paper the question of risk management of the nitrate burden to ground and drinking water is analysed within the framework of comparative policy analysis. Various actors pursue their respective interests in different policy arenas within the given rules of the policy game. The impacts of the policy outputs on the policy addressees, namely farmers and water companies, (substantially) determine the level of actual risk. Different national regulatory styles and traditions towards nitrate regulation shape the policy outputs. Consequently, the assumption or normative postulate of a 'rational' (scientific) risk assessment and risk management appears to be utterly heroic and, in the end, misleading. (NLM)

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HEALTH RISKS .... includes occupational and non-occupational management of risks, radiation, risk/benefit, margin of safety, cancer, genetics and public health.

****Non-occupational exposure to asbestos in buildings: a practical risk management program**
Paull JM, Corn M, Lee PS J, Breysse PN
Sch. Hyg. Public Health, Johns Hopkins Univ., Baltimore
Am. Ind. Hyg. Assoc. J.; VOL 47, ISS 8, 1986,497-504
CBAC COPYRIGHT: CHEM ABS Asbestos exposure risk management program;Air pollution By asbestos fiber, risk management program in relation to Indoor;Asbestos Air pollution by, indoor, exposure risk management program in relation to (NLM)

****Priority setting for industrial chemicals of health and environmental relevance.**
MUECKE W:, SCHULZE H.
Bavarian State Ministry Regional Development and Environment Protection, Rosenkavalierplatz 2, D-8000 Muenchen 81, FR Germany.
CHEMOSPHERE; 15 (6). 1986. 771-780.
BIOSIS COPYRIGHT: BIOL ABS. Decision-making for the reduction of health and far-reaching ecological hazards caused by environmental chemicals must be based on a scientifically founded risk assessment. An Advisory Committee on Existing Chemicals of Environmental Relevance found an approach for dealing with industrial chemicals which are already on the market. Selection was carried out on the basis of criteria applied first as an aggregate and then individually in combination. (NLM)

****Risk management in chemical safety.**
Ulm, Federal Republic of Germany, 8-10 November 1984.
Sci Total Environ; VOL 51, 1986, P1-263
Keywords: Environmental Exposure, Human, Poisoning *PREVENTION & CONTROL, Risk (NLM)

ROLE OF MATHEMATICAL MODELS IN ASSESSMENT OF RISK AND IN ATTEMPTS TO DEFINE MANAGEMENT STRATEGY.
WINBUSH JS:, FLAMM WG,
FUNDAM. APPL. TOXICOL. 1984, 4(3, PT. 2) S395-S401 (NLM)

****Reproductive Health Hazards in the Workplace.**
Volume 1. Selected Ethical Issues in the Management of Reproductive Health Hazards in the Workplace
Office of Technology Assessment, Washington, DC.
Jan 86 117p
See also Volume 2, PB86-172160.
Also available in set of 3 reports PC E99, PB86-172145.

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PB86-172152/XAB
Volume I: Selected ethical issues in the management of reproductive health hazards in the workplace; The moral issues; Ethical issues in risk assessment and the 'right to know'; The policy options before Congress; Ethical issues in discrimination and job termination; Ethical analysis of legislative option: Compensation for reproductive damage resulting from the workplace; Ethics, risk assessment and reproductive hazards. (NTIS)

ECONOMIC ANALYSIS .... includes cost/benefit, cost/effectiveness.

****Dioxin risk management at Times Beach, Missouri (USA): An evaluation.**
MCKONE TE
Univ. Calif., L-453, P.O. Box 5507, Livermore, Calif. 94550.
ENVIRON PROF; 8 (1). 1986. 13-24.
BIOSIS COPYRIGHT: BIOL ABS. The dioxin contamination problem at Times Beach, Missouri, is evaluated in order to determine the implicit cost-benefit ratio employed and to compare this to cost-benefit ratios used for radioactive contamination. An overview on risk analysis is provided in order to lay the analytical framework for later discussions. The events that took place at Times Beach are reviewed with emphasis on those aspects that came under the category of "risk management." The historical data is used to carry out a risk assessment, based on the information that was likely to be available when the incidents at Times Beach were in the EPA decision arena. Information derived from this assessment is used to assess the cost-benefit raito which was implicit in the decision to buy out the community. This cost-benefit ratio is compared to that in use by the Nuclear Regulatory Commission for dealing with radioactive contamination in the nuclear fuel cycle. Consideration is given to those factors that contribute to the difference between this ratio for dioxin and that used for radionuclides. Particular attention is given to the role of uncertainty.
CAS REGISTRY NUMBERS: 828-00-2 (NLM)

****Economic aspects of risk assessment in chemical safety.**
Drummond MF, Shannon HS
Sci Total Environ; VOL 51, 1986, P81-124
This paper considers how the economic aspects of risk assessment in chemical safety can be strengthened. Its main focus is on how economic appraisal techniques, such as cost-benefit and cost-effectiveness analysis, can be adapted to the requirements of the risk-assessment process. Following a discussion of the main methodological issues raised by the use of economic appraisal, illustrated by examples from the health and safety field, a number of practical issues are discussed. These include the consideration of the distribution of costs, effects and benefits, taking account of uncertainty, risk probabilities and public perception, making the appraisal techniques useful to the early stages of the risk-assessment process and structuring the appraisal to permit continuous feedback to the participants in the risk-assessment process. It is concluded that while the way of thinking embodied in economic appraisal is highly relevant to the consideration of choices in chemical safety, the application of these principles in formal analysis of risk reduction procedures presents a more mixed picture. The main suggestions for improvement in the analyses performed are the undertaking of

sensitivity analyses of study results to changes in the key assumptions, the presentation of the distribution of costs and benefits by viewpoint, the comparison of health and safety measures in terms of their incremental cost per life-year (or quality-adjusted life-year) gained and the more frequent retrospective review and revision of the economic analysis that are undertaken. (NLM)

The Environmental Elephant
Tiller, Michael H.
Risk Mgmt v33n11 PP: 48-53 Nov 1986
Recent US regulations require active environmental monitoring from companies. Risk managers can help provide solutions to environmental liability problems. Various options are available to companies to pay for the cost of such monitoring/environmental exploration, including: 1. obtaining coverage under old liability insurance policies, 2. third-party contributors, 3. potential purchasers, 4. superfunds, or 5. exchange of the value of the recovered product. Environmental monitoring should produce a representative picture of conditions under a plant. Time-sensitive issues involved in environmental explorations are: 1. Boreholes need to be properly sealed prior to commencement of drilling. 2. Excavations should be performed during the driest season of the year. 3. Delays in obtaining permits and entry into noncompany property should be anticipated. 4. Fresh soil and water samples will be required by regulators. (ABI)

Environmental Risk Management
Kane, Raymond W.; Morrel, Mark H.
Secured Lender v42n5 pp: 23-32 Sep/Oct 1986
All properties represent a potential environment risk to lenders. Present case law affecting lenders in instances of environmental contamination primarily relates to clean-up responsibilities. There is potential that lenders also may be exposed to personal injury and property damage litigation and awards where title to a business or property has been taken. Sometimes in a contamination, the clean-up and liability costs may exceed the value of the property. Costs of the clean-up depend on: 1. the nature of the contamination, 2. the extent of the contamination, and 3. the regulatory requirements imposed by the state involved. There are a number of actions lenders can take to identify and eliminate or reduce the liability. Environment audits and risk assessments also are useful in identifying and minimizing liabilities. For example, lenders can require environmental impairment liability insurance. Government agencies and courts are likely to continue to look to the available "deep pocket" to cover the financial responsibility for cleaning up environmental contamination. Tables. Charts. References. (ABI)

Thoughts for small and medium sized businesses on risk management of toxic materials spills.
Godfrey, Thomas W.; Stevens, Charles P.
Insurance Counsel Journal 53 382-388 July 1986
JURISDICTION: United States
Keywords: Liability for hazardous substances pollution damages--law and legislation; Risk management--technique (LRI)

BIBLIOGRAPHIES AND OTHER SOURCES .... this section highlights a variety of documents, including bibliographies, guides, handbooks, and other general reference works which describe management tools useful in environmental risk management.

Whos's who in risk management, 1986.
Wolff, Donald E., ed.
1986 224p
ORDER INFO: Underwriter Printing and Pub Co
$50 plus $3 postage and handling
Keywords: *Directories-- Risk management; *Directories-- United States (PAIS)

****Dynamic Programming.** 1976-April 1986
(Citations from the Management Contents Database)
(Rept. for 1976-Apr 86)
National Technical Information Service, Springfield, VA.
Apr 86 113p
PB86-862562/XAB
Supersedes PB84-863638.
This bibliography contains citations concerning dynamic programming models and their many applications to risk management, game theory, and problem solving-decision analysis. Mathematical programming techniques are discussed relative to the varying degrees of their usage in different segments of American business. Examples of this modern management tool in all facets of corporate business are provided. (This updated bibliography contains 191 citations, 16 of which are new entries to the previous edition.) (NTIS)

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Risk
COMMUNICATION

.... THE PROCESS OF EDUCATING AND INFORMING AN AUDIENCE TO MAKE BETTER PERSONAL AND SOCIETAL DECISIONS REGARDING RISK.

INFORMING THE DECISION-MAKER *

INFORMING THE PUBLIC 111

INFORMING THE WORKER 115

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COMMUNICATION

INFORMING THE PUBLIC

****COMPLIANCE WITH STATE AND FEDERAL RIGHT-TO-KNOW LAWS WHAT ARE WE ALL FACING**
LEONARD DL
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT OSHA LAWS (NLM)

****HAZARD COMMUNICATION THE ROLE OF THE MEDIA AND EFFECTS OF COMMUNITY RIGHT-TO-KNOW**
ADKINS JM
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT (NLM)

****AN INTEGRATED APPROACH TO HAZARD COMMUNICATION COMPLIANCE**
THOMANN WR, FEILD RA
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT RIGHT-TO-KNOW LAWS HAZARDOUS WASTE MICROCOMPUTERS DATA-BASE MANAGEMENT (NLM)

****Armageddon in North Carolina**
Reid, Dee
Technology Review v89n6 PP: 48-49 Aug/Sep 1986
The North Carolina Occupational Safety and Health Project (NCOSH) was working toward the enactment of ''right-to-know'' ordinances at the local and state levels shortly before an accidental gas explosion at Armageddon Recycling Co. (Durham, North Carolina) forced residents to be evacuated. If a right-to-know ordinance had existed at the time of the leak, the city would have been better able to handle the situation. The coalition, now known as the Durham Toxics Coalition, continued to work on the right-to-know ordinance. A month after the final public hearing concerning the drafted ordinance, the city council received statements for the Chamber of Commerce and the city's largest manufacturing employer. Several concerns were addressed, including the revelation of trade secrets and the fear that new businesses would choose to locate in areas

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that had no local right-to-know regulations. Compromises were made and the ordinance was passed. Since that time, a state law has been passed, preempting everything Durham had done. However, the work done on the local ordinance has had a lasting effect at both the state and local levels. (ABI)

****Labeling in hazard communication**
Hall, S.K.
189th ACS National Meeting 8520050 Miami, FL (USA)
28 Apr-3 May 85
American Chemical Society (ACS)
Abstracts available. Contact the American Chemical Society, Distribution, Room 210, 1155 16th Street, N.W., Washington, DC 20036, USA
Keywords: CHEMISTRY AND CHEMICAL ENGINEERING (CPI)

****Looking behind the factory gates: right-to-know laws requiring businesses to divulge information about chemicals they use may help improve public health.**
Chess, Caron.
Tech R 89:42-7+ Ag/S '86, il
Evolution and implementation of laws in Philadelphia, Pennsylvania, New Jersey, and Massachusetts.
Keywords: *Industrial toxicology; *Freedom of information-- Legislation; *Hazardous materials-- Regulation; *Public health-- United States; *Philadelphia, Pennsylvania; *New Jersey; *Massachusetts (PAIS)

New Superfund Act widens lawyers' role
Roberts, Charley
Los Angeles Daily Journal v99 p5 Oct 21 1986
EDITION: Tue
JURISDICTION: United States
Keywords: Superfund--law and legislation; Hazardous waste management industry--law and legislation; Right to know (Hazardous substances)--law and legislation (LRI)

*86-063765
***PESTICIDE RESISTANCE AND PUBLIC POLICY,**
DOVER MICHAEL J. ; CROFT BRIAN A.
(OREGON STATE UNIV),
BIOSCIENCE, FEB 86, V36, N2, P78(8)
JOURNAL ARTICLE TO PROTECT CROPS, LIVESTOCK, AND PUBLIC HEALTH FROM THE DAMAGE WROUGHT BY RESISTANT PESTS, RESEARCHERS ARE NOW DEVELOPING RESISTANCE MANAGEMENT. THE LATTER SEEKS TO PREVENT, DELAY, OR REVERSE THE EVOLUTION OF RESISTANCE TO INSECTICIDES BY A VARIETY OF CHEMICAL AND ECOLOGICAL TACTICS. A REVIEW FOCUSES ON HOW RESISTANCE MANAGEMENT RELATES TO THE RESEARCH, REGULATORY, EDUCATIONAL, AND MARKETING INSTITUTIONS THAT ESTABLISH AND IMPLEMENT THE COMPLEX POLICIES GOVERNING PESTICIDE USE. IMPORTANT COMPONENTS OF A RESISTANCE MANAGEMENT PROGRAM ARE IDENTIFIED AS RESISTANCE

MONITORING, RESISTANCE RISK ASSESSMENT, FEDERAL PESTICIDE REGULATION, AND EDUCATION AND EXTENSION. (ENVL)

Reducing the risk of chemical accidents: the post-Bhopal era.
Montgomery, Christian
Environmental Law Reporter 16 10300-10305 Oct 1986
JURISDICTION: United States
Keywords: Chemical industries--safety measures; Industrial safety--Law and legislation; Right to know (Hazardous substances)--law and legislation (LRI)

****PANEL DISCUSSION ON HAZARD COMMUNICATION TRAINING AND IMPLEMENTATION**
MECK L, MARSICK D
192ND AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, ANAHEIM, CALIF., USA, SEPT. 7-12, 1986.
ABSTR PAP AM CHEM SOC; 192 (0).
1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT HUMAN WORKER OSHA (NLM)

The right to know: does OSHA's toxic hazard communication rule preempt state statutes requiring public disclosure of workplace toxics?
March, Charles W.
University of Detroit Law Review 62 463-497 Spr 1985
JURISDICTION: United States; states
Keywords: Right to know (Hazardous substances)--law and legislation; Exclusive and concurrent legislative powers--law and legislation (LRI)

Tennessee's Hazardous Chemical Right to Know Law.
Fisher, Bruce D.; Massingale, Cheryl S.
Tennessee Bar Journal 22 25(5) May-June 1986
CODEN: TBJOD2
JURISDICTION: Tennessee
Tennessee Hazardous Chemicals Right to Know Act
Keywords: Hazardous substances--Law and legislation; Chemicals--Safety measures (LRI)

INFORMING THE WORKER

****BUSINESS RESPONSE TO RIGHT-TO-KNOW TRAINING REQUIREMENTS**
MUSSELMAN VC, HARRIS LR
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT HAZARDOUS CHEMICALS INDUSTRIAL SAFETY (NLM)

****ETHICAL CODE FOR AN EVOLVING PROFESSION**
BENASHSKI R, BERG SF
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT INDUSTRIAL HYGIENE CHEMICAL HAZARD COMMUNICATION (NLM)

****Notifying workers at risk: the politics of the right-to-know.**
Bayer R
Hastings Center, Hastings-on-Hudson, NY 10706.
Am J Public Health; VOL 76, ISS 11, 1986, P1352-6
Keywords: Consumer Advocacy *LEGISLATION & JURISPRUDEN, Environmental Exposure *, Government Agencies, Human, Public Health *, Risk Support, Non-U.S. Gov't, United States (NLM)

Hazard communication and right-to-know: passion, progress, practice.
Solomon CJ
AAOHN J; VOL 34, ISS 6, 1986, P264-8
Keywords: Communication *, Environmental Exposure *, Environmental Pollutants *, Human Rights *, Human, Occupational Diseases CHEMICALLY INDUCED/PREVENTION & CONTROL, Occupational Health Nursing, United States (NLM)

Hazard communication. Workers' right to know--nurses' need to know.
Babbitz MA
AAOHN J; VOL 34, ISS 6, 1986, P261-3
Environmental Pollutants *, Human, Legislation *, Occupational Diseases CHEMICALLY INDUCED/*PREVENTION & CONTROL, Occupational Health Nursing, Societies, Nursing, United States Occupational Safety and Health Administration, United States (NLM)

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INFORMATION TRANSFER BEYOND THE HAZARD COMMUNICATION STANDARD
ASHFORD NA
71ST ANNUAL MEETING OF THE AMERICAN OCCUPATIONAL MEDICAL ASSOCIATION, DENVER, COLO., USA, APR. 27-MAY 2, 1986.
J OCCUP MED; 28 (4). 1986. 310.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT HUMAN OSHA RIGHT-TO-KNOW MEDICAL ACCESS RULE TOXIC SUBSTANCES CONTROL ACT EPA (NLM)

Medical surveillance: biological, social, and ethical parameters.
Samuels SW
AFL-CIO Industrial Union Department, Washington, DC 20006.
J Occup Med; VOL 28, ISS 8, 1986, P572-7
The need for a graded response to environmental risks, including the need to extend medical surveillance, for which screening is one tool, to populations at high risk of occupationally attributable disease is discussed from ethical, social, and biological perspectives. Ethical judgments need to be understood in terms of their derivation and implications in the form of rights or criteria for moral management of such populations. These rights must be exercised in an appropriate social context enabling the right-to-know and notification. Discussion of the biological perspective heuristically is conducted in terms of "population thinking.: Critical methodologic problems emanate from this approach that impact on deterministic orientations in the interpretation of individual surveillance data. Nelson's concept of "added burden of risk: is seen as a valid postulate for management of populations at risk. (NLM)

****SELECTION OF APPROPRIATE TRAINING PROGRAMS FOR HAZARD COMMUNICATION**
MARSICK DJ
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT OSHA (NLM)

****SELECTED AUDIO-VISUAL PROGRAMS FOR CHEMICAL SAFETY AND INDUSTRIAL HYGIENE**
URIARTE RJ
192ND AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, ANAHEIM, CALIF., USA, SEPT. 7-12, 1986.
ABSTR PAP AM CHEM SOC; 192 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT HUMAN STUDENT RIGHT-TO-KNOW (NLM)

****TRAINING TO COMPLY WITH THE HAZARD COMMUNICATION STANDARD**
LAY CR
191ST AMERICAN CHEMICAL SOCIETY NATIONAL MEETING, NEW YORK, N.Y., USA, APR. 13-18, 1986.
ABSTR PAP AM CHEM SOC; 191 (0). 1986. NO PAGINATION.
BIOSIS COPYRIGHT: BIOL ABS. RRM ABSTRACT (NLM)

UNDERSTANDING OSHA'S HAZARD COMMUNICATION STANDARD
FLYNN LT
DRUG COSMET IND; 139 (1). 1986. 32, 35, 71-72.
BIOSIS COPYRIGHT: BIOL ABS. RRM HAZARDOUS MATERIALS (NLM)

The Workers' Right to Know, Participate and Refuse Hazardous Work: A Manifesto Right
Sass, Robert
Jrnl of Business Ethics (Netherlands) v5n2 PP: 129-136 Apr 1986
The importance of health and safety on the job brings out arguments for increased worker rights in regard to the chemicals with which they work, to participate in work environment rules, and the right to refuse a job believed to be dangerous. Considering these issues leads to the argument of extending worker rights to include dealing with work organization matters and job design. Present conceptions, which have evolved from feudalism to capitalism, place most rights in the domain of the employer. However, the work agreement should be, in essence, a voluntary agreement. Critics of this view believe that it is necessary to sacrifice equity to preserve efficiency. Yet, in instances of worker participation, studies find that productivity increases with such participation. In regard to health and safety, meaningful participation and greater control have positive effects on worker health and safety. The often-held management view that accidents result from worker carelessness endures because it is tactically advantageous, not because of any empirical foundations. References. (ABI)